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State of the GTA 2000



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State of the GTA 2000

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for the

Greater Toronto Services Board

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Acknowledgements

Parts of this report are based on a previous report prepared by the GTSB, entitled *State of the GTA in 2000, Phase 1*, September 2000.

In addition, the authors would like to acknowledge the contributions of the GTSB staff team throughout the study process, and as well the valuable input of participants at a workshop held in January 2001. A list of staff team members and workshop participants is included in Appendix 1. Thanks also to the Neptis Foundation, for allowing herein the use of the results of research they recently sponsored (the “GTA: Portrait of a Region” project).

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Executive Summary

Key Conclusions of the Report

The good news

In sum, the region has been performing well on a number of fronts. High levels of population growth demonstrate that this is a desirable place to live, and performance on a range of economic indicators positions us well for the future, following a dramatic and difficult restructuring in the late 1980s and early 1990s.

Many social indicators show improvements, such as those reflecting health, education and safety. And there is positive news on some environmental indicators – reduced waste per capita, and lower levels of certain air pollutants, for example.

On the other hand, other areas show little improvement on past trends – these are the “ongoing problems.” And some potentially serious issues are arising – the “emerging issues.” The analysis has also exposed things that are not issues at the moment, but from a strategic point of view are essential to monitor and prepare for – the “potential vulnerabilities.”

Ongoing problems

Low density, primarily greenfields development is an ongoing problem, particularly given the rapid population and employment growth being experienced in the GTA. In the face of an additional two million inhabitants in the next two decades, action must be taken immediately to achieve more efficient, compact urban form.

Attention should be directed to include a much stronger focus on the causes of sprawl, so that its impacts can be properly addressed in policy and planning.

Current development patterns are of course closely linked to transportation. The analysis undertaken in this report, along with other analyses, clearly point to an impending transportation crisis in the GTA if urban development continues in its current form, and remains unaccompanied by adequate investment in transportation infrastructure and by actions to restrain the growth in road traffic.

It is especially important from a sustainability perspective that significant investments be made in support of alternatives to the automobile, particularly in transit improvements. In addition, the areas of freight transportation and non-commuting auto trips should be addressed much more urgently. These currently ignored areas are where rapid growth is taking place, along with the associated negative impacts.

Urban form and transportation issues are, in turn, closely linked with another ongoing issue – smog. While other elements of air quality have shown improvement in recent years, no such amelioration is evident with respect to smog. Seriously addressing urban form and transportation must be part of a strategy for smog reduction.

Other ongoing issues include rental housing affordability and availability. Aside from the obvious quality of life implications, not addressing this issue may have serious implications for the long term stability of the Toronto economy, if adequate housing cannot be provided for low-income workers.

Finally, there is a need to find more enduring solutions to the garbage issue, with some focus on reducing the initial generation of waste and on securing better information about commercial and industrial waste.

Emerging issues

One special area of concern identified in the above analysis is increasing economic, social and geographic polarization within the region.

While not yet at extreme levels, particularly compared to other global cities, the evidence presented above regarding increasing income polarization, diverging incomes between inner and outer areas of the region, and increasing neighbourhood homogeneity should be treated as an early warning sign. These are not positive trends.

It is important to recognize that as the region continues to grow and mature over the coming years, these trends will not be confined to inner areas, but will ripple outwards as what are now newer neighbourhoods age and become more “inner” in the context of an expanding urban region.

Increasing social tension, creation of areas of deprivation and disinvestment, and increased crime are all potentially associated with a continuation of these trends. Aside from the obvious social impacts, they could have serious implications for the sustained vibrancy of the Toronto economy as a place to invest, live and do business.

A second emerging issue is increasing social dependency. This is an inevitable result of an aging population. We can expect the impacts to kick in when or just before the leading edge of the baby boom hit 65 years of age, in just over a decade from now. There are important implications for service provision, municipal finance, housing and transportation that must begin to be addressed.

Potential vulnerabilities

Finally, the above analysis has pointed to some potential vulnerabilities. We need to develop strategies for dealing with these issues, which could have transformative implications for the GTA. They include our vulnerability to significant energy

price increases, given our high levels of energy use for transportation and for heating and cooling buildings and our near-total dependence on energy imported into the GTA.

A second area of vulnerability is any change to federal immigration policy – increases or decreases – given that growth in the region is almost completely dependent upon international immigration.

In any event, it is clear that the continued future prosperity of the GTA will depend on several key determinants: its ability to produce, attract, and retain well-educated and talented labour; the quality of its natural and built environment; its continued success at balancing social diversity and harmony while minimizing socio-economic polarization; the vibrancy of its cultural life and institutions; and the quality and supply of infrastructure supporting transportation and communications.

Future Analysis

It is important to note that many of the data presented in this report – though the most recent available – are not recent enough to capture the effects of important changes made in the latter half of the 1990s. In addition, many important data are not available at the GTA level. We expect that these changes will have produced some dramatic results affecting the social, economic and environmental conditions in the GTA. We need much better and more up-to-date data at the GTA level.

The Context for State of the GTA Reporting

This is a critical time. The Greater Toronto Area, like other city-regions around the world, is in the midst of an economic and technological revolution. We are seeing the emergence of a global, electronic economy and a new GTA culture. The Toronto region must compete with other city-regions for its skilled labour, investment, jobs, and markets. Sustainability is becoming integral to everyday living.

Environmental awareness and action are coming to the fore with issues such as water quality, air quality, and protection of the Oak Ridges Moraine directly affecting GTA residents' lives.

Underlying all of this is quality of life. Quality of life is increasingly central not just to how well we live on a daily basis, and our future prospects, but also to the economic, social and environmental future of the region as a whole.

State of the Region reporting addresses the quality of life in the GTA. It measures things that directly affect our daily experience of living in this region – things like employment, an equitable regional society, safety, clean air to breathe and traffic congestion. But State of the Region reporting also puts these issues in the broader context of economic, social and environmental change.

More than ever, we need to understand what changes are underway in the region and what is driving those changes. This is essential in order to determine how to respond effectively – in terms of planning, policy, investment, strategy, or specific projects. It points to effective action at all levels – local, regional, provincial and federal.

This is why we have used a “causal” framework for the State of the GTA in 2000 report. It is very powerful because it can not only monitor what is going on, but also attempts to identify why and how those changes are taking place – what causes are behind them and what forces are shaping our region.

Nevertheless, it is important to keep in mind that indicators provide only a quick snapshot of an often complex picture. They can provide useful information and monitoring, but should be considered the beginning of detailed analysis, not the culmination of it.

This *State of the GTA in 2000 Final Report* includes analysis undertaken in and builds on the *State of the GTA in 2000 Phase 1* report, which was completed in September 2000. The Phase 1 report focused on the identification of indicators which reflect

outcomes. Phase 2 expanded the analysis of outcomes, and addressed the underlying *causes* of GTA-wide outcomes. This report draws together the work of both phases. It lays a foundation for future reports, to be conducted every three years, with the next full report in 2003.

Population Growth

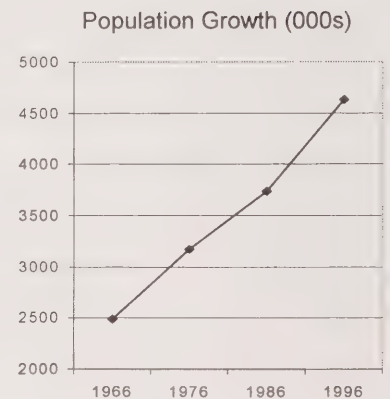
A sustained high rate of population growth is one of the GTA's defining features. The region's population roughly doubled in the last three decades, from under 2.5 million in 1966 to over 4.6 million in 1996. Current estimates point to a population of close to 7.0 million in 2021. Indeed, Toronto is one of the fastest growing cities in North America.

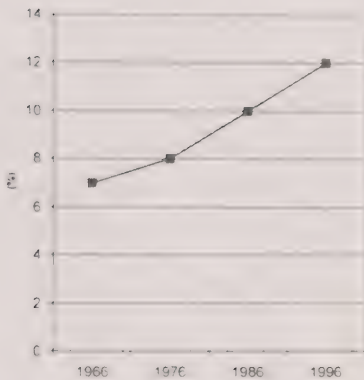
The nature of population growth has also changed considerably in recent years. As birth rates have continued to decline, immigration has become the driving force behind the region's population growth. By the 1990s, immigration represented over 94 per cent of regional population growth. Immigrants now account for over 40 per cent of the GTA population.

This pattern of growth makes Toronto one of the most diverse metropolises in the world. By and large, the Toronto region has done an exceptional job at absorbing the diverse range of new immigrants.

Nevertheless, there are a number of issues related to immigration. These include providing services such as language training, accessible and affordable housing and job opportunities.

It is also clear that growth patterns in the region are highly dependent upon federal immigration policy – any sudden changes in these policies will have dramatic impacts on growth in the region. Indeed, high immigration rates continued through the early to mid-1990s, even when the regional



% GTA Population
Older Than 65

economy was in a relatively deep recession and unemployment rates were high.

A final key characteristic that shapes the Toronto region today and into the future is the aging of the population. As the baby boom generation continues to age and birth rates fall, the proportion of the population aged 14 and under and over 65 has increased. These two age cohorts are particularly important as indicators of social change because they define the social dependency level, and thus the costs of social service provision. Since the mid-1980s, however, these groups have accounted for a sharply growing share of the population, largely because of the growing elderly population.

The Economy

The GTA's economy is the largest metropolitan economy in Canada. As of 2000, over 2.6 million GTA residents held jobs. The output of the regional economy was placed at \$171 billion in 1999, making Toronto's output larger than that of every other province except Quebec.

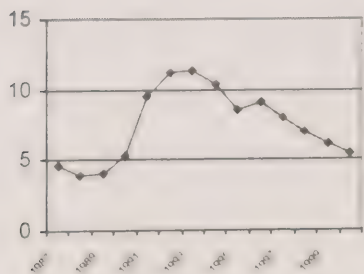
Since the late 1980s, the Toronto region has experienced a massive restructuring as a result of factors such as NAFTA, the recession of the early 1990s, and the broader transition to a global, digital economy.

The late 1980s and early 1990s were characterized by the loss of jobs – almost 150,000 jobs were lost in the early part of the decade – particularly in the manufacturing sector.

Since around 1993 or 1994, we began to see improvement on a number of economic fronts. Employment levels began to climb, and unemployment rates began to fall. As of December 2000, the unemployment rate stood at 5.8 per cent in the Toronto CMA, compared to 6.8 per cent for Canada.

The makeup of the regional economy has been changing as a result of the restructuring toward a global digital economy. Traditional sectors have declined, and higher valued-added

GTA Unemployment Rate



activities, such as advanced manufacturing, financial services, business, scientific, cultural and technical services have grown steadily since 1994. Entirely new industries have emerged, such as computer hardware, software and the multimedia sector.

Other indicators suggest that the Toronto region is now transitioning well to the global digital economy. R&D funding to universities, which affects the long term potential of the economy, is up substantially since 1993. The number of patents registered in the GTA – an indication of the innovative capacity of our economy – is also up in recent years, though it has not regained levels achieved in the early 1990s.

Education levels have also continued to improve since 1986. Given that the global economy is driven by knowledge, innovation and other intellectual capability (creativity, know-how, skills, etc.), this bodes well for the long term well-being of the regional economy.

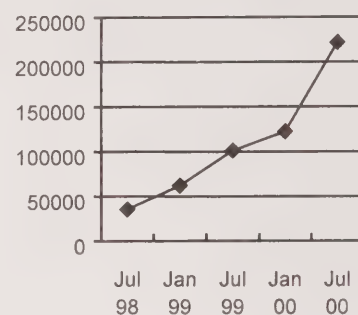
At the same time, the apparent decline in foreign-based headquarter activity raises some questions about the continuing attractiveness of the region as an investment site.

Community Affordability

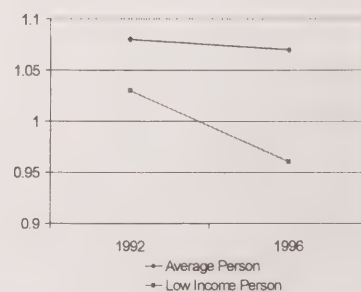
The liveability of a community is judged, in part, by whether it is affordable to those who live there. Community affordability can also affect the long-term sustainability of the regional economy – a region in which workers cannot afford to live is likely to see the departure of companies dependent upon that labour force. This has been happening in some very economically successful urban regions, such as Silicon Valley, where house prices have become so high workers cannot afford to live there, and companies are relocating to lower-cost locations.

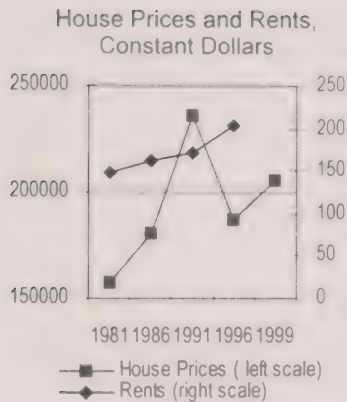
In the Canadian context, Toronto is neither the most, nor the least affordable city for the average person. However, for low-income persons, only Vancouver is less affordable.

The Digital Economy
Domain Name Registrations, GTA



Community Affordability Index





Between 1991 and 1996, affordability fell slightly for the average person, but fell considerably for the low income person.

A big part of affordability is attributed to housing, which is generally the most significant single expense for households. Indeed, in the GTA, the percentage of households that spend more than 30 per cent of their income on housing rose significantly between 1986 and 1996. This was particularly true for renters.

Affordability for renters fell both as a result of a significant drop in real household income between 1991 and 1996, and an increase of 36 per cent in rent levels between 1986 and 1996 – in constant dollars. For homeowners, on the other hand, affordability actually *increased* during this period, as house prices fell even more dramatically than income levels, as a result of the dramatic drop in house prices associated with the recession of the early 1990s. Indeed, house prices in the GTA have still not regained the pre-recession peak prices of 1989.

The divergent affordability trends for renters and owners appear to be continuing in the latter half of the 1990s. The consumer price index for rents was 13 per cent higher (in constant dollar terms) in 1999 than in 1992, while the CPI for ownership housing was actually lower – that is, ownership housing has become cheaper in real terms during the same period.

This may be due in part to supply factors. Construction of new housing picked up significantly in the latter half of the 1990s, to reach about 38,000 units in 1999. During the same period, the supply of new rental housing fell from a peak of about 10,000 units in 1992, to a few hundred each year since 1997.

Equity

Despite the fact that the Toronto economy has been performing well in the latter half of the 1990s, the benefits of

economic expansion have not been equally distributed across the region, socially or geographically. In fact, the evidence suggests that the distribution of wealth in the Toronto region is becoming more unequal.

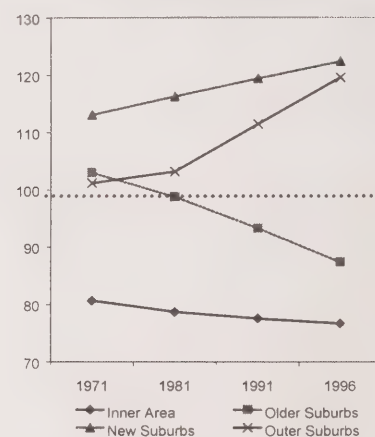
The incidence of poverty is higher in the GTA than in the province as a whole, primarily because of relatively high living costs here. Moreover, the proportion living below the poverty line increased significantly between 1991 and 1996 – from 14 per cent to 20 per cent. Poverty is most common among single parents, those living alone, recent immigrants and the disabled.

Toronto's index of income inequality increased by 20 per cent between 1981 and 1996, compared to an increase of 17.8 per cent for all metropolitan areas in Canada. Overall, the GTA has the third highest index of income inequality in Canada, after Montreal and Winnipeg.

Even without the effects of increasing income polarization in the GTA as a whole, the region has been becoming a more economically segregated place. Since 1971, incomes in the inner area and older suburbs have declined relative to the regional average, while incomes in the outer and new suburbs have increased. Individual neighbourhoods are also becoming more economically homogeneous, as a process of residential “sorting” is underway.

It is important to note that it has been possible to track the trends described above only to 1996. Since then, of course, there has been significant economic recovery, as described earlier. In addition, there has been considerable restructuring in the nature and delivery of government programs, including welfare, unemployment insurance, social housing etc. Both of these factors will have had important effects on the trends described above.

Median Household Income relative to GTA median (=100)



Education, Safety and Health

As mentioned above, education levels have been improving in the GTA, which bodes well for literacy, as education has been identified as the most significant determinant of literacy in Canada.

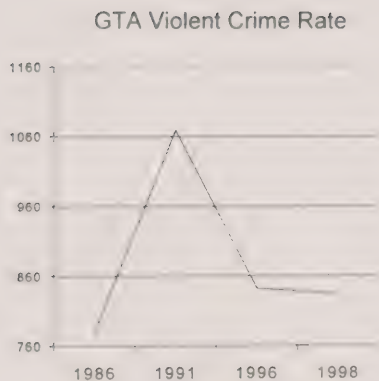
Not surprisingly, literacy in English or French is significantly lower for those whose mother tongue is not one of those two languages.

This is especially relevant in the Toronto region, where immigration plays such a significant role in population growth and composition. Even though younger immigrants generally have higher levels of educational attainment than the Canadian-born population, their (at least initial) lack of fluency in one of the official languages means poor literacy performance.

Ensuring access to language training is therefore critical in the GTA, in order to provide appropriate opportunities for this otherwise well-educated segment of society.

Personal safety and security are essential to the quality of life in the region. Moreover, a safe community is a potential competitive advantage that the GTA may offer over other North American cities. As in the case in many cities, crimes of all kinds are on the decline. Rates of violent crime, for example, have declined significantly since 1991.

The overall health of GTA residents under 75 appears to be improving. This could be the result of more healthy living, i.e. reduced smoking, improved nutrition and medical care. However, the age profile of GTA residents is changing rapidly, with the population over 75 a growing proportion. Accordingly, in the longer term, improvements in the health of GTA residents is occurring in tandem with a trend to larger numbers of elderly persons, who are more prone to health problems. This has important implications for the provision of health services in the Region.



Transportation and Urban Form

Travel demand – especially automobile travel and truck travel – has increased dramatically in the GTA between 1986 and 1996, by about 30 per cent. This compares with population growth during the same period of 21 per cent.

The use of public transit, on the other hand, has remained relatively steady in absolute terms, but represents a declining share of all travel, falling from 17.4 per cent in 1986 to 14.6 per cent in 1996. Meanwhile, road capacity increased about 7 per cent during the same period, leading inevitably to increased congestion.

With respect to the *purposes* of travel, the period 1986-1996 saw a relative shift away from work-related journeys and towards so-called discretionary journeys, i.e., journeys for shopping, socialization, and recreation.

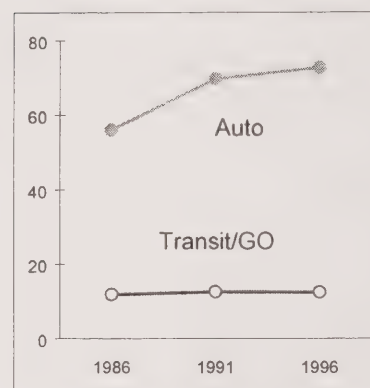
The growth in the overall amount of travelling by car between 1986 and 1996 had three fundamental causes:

- there were more people in 1996,
- each person on average made more journeys by car in 1996, and
- each journey was longer on average in 1996.

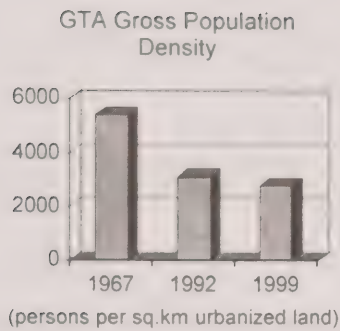
Increases in the numbers of automobile trips per person and in average trip length could be related directly to the ongoing decline in settlement densities.

Indeed, as it has added population and employment between 1967 and 1999, the urbanized area of the GTA increased 3.6 times, compared with a population increase of only 1.9 times between 1967 and 1999. Over the same period, the GTA's gross population density fell by almost half, from about 5,400 residents per km² of urbanized area to 2,800 residents per km².

Total travel per Weekday, GTA



(millions of person-kilometres)



This is primarily because newly urbanized areas have been developed at progressively lower densities – at about 1,900 residents/km² between 1967 and 1992 and 1,700 residents/km² between 1992 and 1999. Non-residential densities have likely fallen at faster rates than residential densities, but we do not at present have good data on this.

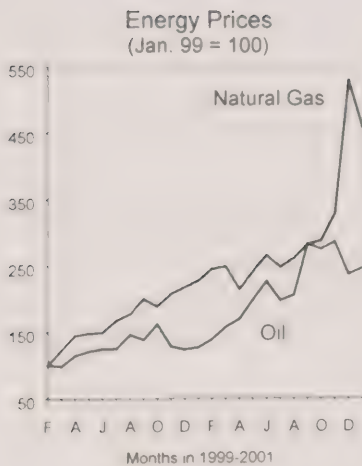
Given expected growth of roughly two million people over the next 20 years or so, issues of urban form, density and the location of new growth will become even more critical, particularly as urbanization continues to result in the loss of prime agricultural land and pressure for development on the Oak Ridges Moraine increases.

The Environment

The quality of the environment is a concern throughout the GTA. In settled areas the major issues are to do with the health and well-being of GTA residents.

In these areas and in the more extensive natural and agricultural areas of the GTA, there are numerous issues to do with ecosystem health, i.e., the extent to which wide varieties of plant and animal species can flourish in supportive environments. Environmental quality is also an increasingly important economic factor in determining the attractiveness of the region to the highly skilled, mobile labour that drive the new economy. The region's performance on the environment ranges from issue to issue.

At present, good, region-wide data on the use of energy in the GTA is not available. Data for the City of Toronto show that consumption of both oil and natural gas has been essentially constant over the period 1988-99. Recent national research suggests that the residential sector's share of energy use has declined, while that of other sectors, particularly industry and transportation, has increased. Increased energy efficiency



was offset by increases in population and energy-intensive activities.

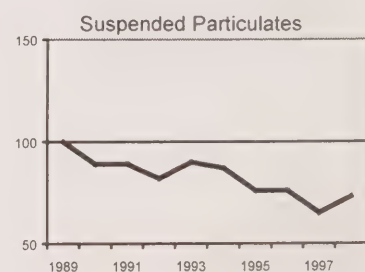
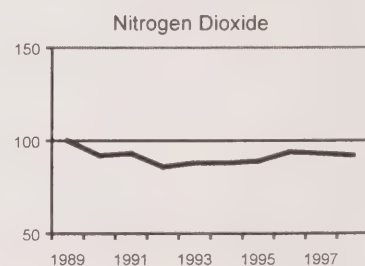
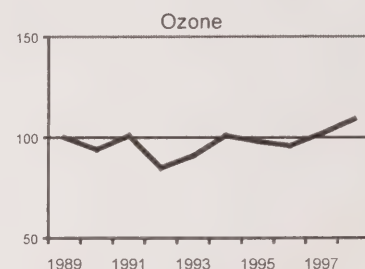
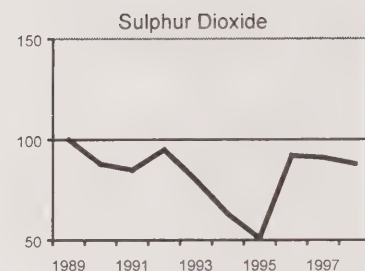
Recent price instability provides strong initial signals of emerging changes in energy availability. Should large increases in fuel prices continue, places where there has been attention to reducing energy dependence will show a competitive advantage over places where there has been no such attention.

The use of energy is of course closely linked to air quality. In some respects, the quality of the GTA's air is improving, notwithstanding the growth in population and economic activity, and the even larger growth in transport activity, the main source of most of the GTA's air pollution. The number of days considered to have poor air quality has a possible declining trend, and average levels in the air of many of the major pollutants are falling.

A significant exception to the declining trends is ground-level ozone (a form of oxygen), which damages all living things and many materials and is the main constituent of smog. The number of smog-alert days has a possible increasing trend, as does the average concentration of ozone in the air.

Local and regional governments in the GTA do not have direct responsibility for air quality. However, many actions of municipal governments, particularly in relation to transportation and land use, can have a considerable effect on the quality of the GTA's air.

With respect to water quality, the quality of piped water in the GTA is high, particularly in relation to world standards. However, there are potential issues concerning the high *quantities* consumed, the relatively high inputs of chemicals and energy to purify and distribute the water, and resulting burdens on sewage systems. This may occur in part because by world standards, the price of water in the GTA is relatively low.



On the other hand, increasing attention is being focussed on the quality of surface and ground water in the region. Models are being developed to assess the extent of degradation, such as that used in Halton Region, which found that about half of the lengths of the watercourses studied are impaired. The impairment is associated with agricultural activity and with residential and commercial development.

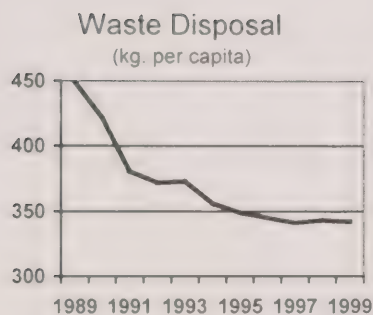
There appears to be a positive trend regarding waste disposal in the GTA. Estimated disposal per capita has fallen sharply, from 450 to 340 kilograms per capita between 1989 and 1999, with an indication that it has leveled off during the last few years.

Aggressive programs to encourage recycling and composting have been implemented throughout the GTA and have no doubt been effective in preventing increases in the amounts sent for disposal.

A more important factor may be economic activity, with which waste production is strongly correlated. The increases in total waste generation seen in the late 1990s may indicate the off-setting of the effects of diversion programs by waste production resulting from growth in economic activity.

The disposal trends discussed above apply to residential and municipal waste only. Commercial waste, and that from most apartment buildings, is handled privately, and there are scant data available.

The current use of distant landfill sites for disposal of commercial and industrial waste incurs a large environmental cost. It also makes the GTA vulnerable to political action elsewhere that could deny access to disposal sites on which it has come to depend. While ambitious targets for the diversion of municipal waste from disposal are being set across the GTA, little attention is being paid to reducing the initial generation of waste, although this may potentially be a more important factor.



As the issue of waste disposal suggests, activities within the GTA can have environmental impacts far beyond the region's borders. Two other important global environmental impacts of activities in the GTA come from:

- emissions of greenhouse gases during combustion of fossil fuels and
- the release of substances that deplete the stratospheric ozone layer (such as chlorofluorocarbons, or CFCs).

There are no good recent estimates of the extent of either kind of emission in the GTA. The partial data available place Toronto at the high end of carbon dioxide emissions amongst the OECD countries.

Emissions of ozone-depleting substances are likely to have fallen throughout the GTA during the 1990s on account of a general phasing out of the most potent of them in general use (CFCs) and their replacement in air conditioning units by less ozone-depleting substances.

Where do we go from here?

In sum, the region has been performing well on a number of fronts. Very high levels of population growth demonstrate that this is a desirable place to live, and performance on a range of economic social, and environmental indicators positions us well for the future. However, a number of other issues expose ongoing problems, emerging issues and potential vulnerabilities that require attention and effective, co-ordinated responses.

These include:

- current urban development patterns, particularly in the face of projected rapid population and employment growth, requiring, in part, more attention to be focused on development patterns of commercial and industrial lands

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- a worsening transportation problem, which requires attention to urban form, investment and demand management (particularly non-commuting auto travel and freight travel)
- the not-so-distant future financial burdens of increasing social dependency, particularly tied to an aging population
- increasing polarization within the GTA between inner and outer areas, between neighbourhoods, and between renters and owners
- energy use and dependency under sustained high prices.

This review has assessed where the GTA stands on a limited number of key indicators. The scope and effectiveness of this exercise is only as good as the data and analysis upon which it is based. There are gaps in data availability at the regional level on a number of important fronts. For the next *State of the GTA in 2003* report, we strongly recommend that mechanisms be put in place to allow the continued collection of the following key pieces of data:

- social well-being and levels of social assistance
- private and public sector investments in fixed capital and infrastructure
- availability and use of venture capital
- all aspects of freight transport throughout the GTA
- locations of expansion and proposed expansion of the urbanized area
- non-residential densities (commercial, industrial, institutional)
- percentage of new housing and employment on already-urbanized land vs. greenfields sites
- health, including mental health
- water quality (surface and ground water)

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- water consumption per person per day (domestically, and for other purposes)
- commercial and industrial waste generation
- measures of biodiversity
- energy use, and global environmental impacts of GTA activities.

II. Introduction

This is a critical time. The Greater Toronto Area, like other city-regions around the world, is in the midst of an economic and technological revolution. We are seeing the emergence of a global, electronic economy and a new GTA culture.

The Toronto region must compete with other city-regions for its skilled labour, investment, jobs and markets. Sustainability is becoming integral to everyday living. Environmental awareness and action are coming to the fore with issues such as water quality, air quality, and protection of the Oak Ridges Moraine directly affecting the lives of GTA residents.

Underlying all of this is quality of life. Quality of life is increasingly central not just to how well we live on a daily basis, and our future prospects, but also to the economic, social and environmental future of the region as a whole.

State of the Region reporting addresses the quality of life in the GTA. It measures things that directly affect our daily experience of living in this region – things like employment, an equitable regional society, safety, clean air to breathe and traffic congestion. But State of the Region reporting also puts these issues in the broader context of economic, social and environmental change.

More than ever, we need to understand what changes are underway in the region and what is driving those changes. This is essential in order to determine how to respond effectively in terms of planning, policy, investment, strategy, or specific projects. It points to effective action at all levels – local, regional, provincial and federal.

This is why we have used a “causal” framework for the State of the GTA in 2000 report. It is very powerful because it can not only monitor what is going on, but also attempts to identify why and how those changes are taking place – what causes are behind them and what forces are shaping our region.

This report builds on preliminary State of the GTA reporting conducted in 1999. It lays a foundation for future reports, to be conducted every three years, with the next full report in 2003.

Background to State of the GTA Reporting

At its meeting on March 3, 2000, the Greater Toronto Services Board adopted its 2000 business plan and budget, including a work program for State of the GTA reporting in 2000. A number of objectives have been identified for State of the GTA reporting:

- provide valuable information about how the region is evolving over time (i.e. whether we are making progress towards our goals)
- act as an “early warning” system for the region, allowing us to identify potential issues in advance and develop appropriate responses before the problems become more unwieldy;
- provide an informed basis for strategy development, prioritization (e.g. of investments) and other decision making;
- help manage the city-region more cost effectively, by providing a basis for knowing whether policies, programs, initiatives and investments are working effectively;
- raise awareness – among the public, in business, and all levels of government – regarding the importance of the GTA region and the important interconnections within the GTA; and
- provide valuable comparative and other information that can be used in marketing the region internationally¹.

To date, the Board has adopted an organizational framework for the State of the GTA program and a 1999 preliminary State of the GTA report. The 1999 report focused on the current status, with a strong emphasis on economic perspectives.

This *State of the GTA in 2000 Final Report* builds on the *Phase 1 State of the GTA in 2000* report, which was completed in September 2000. The Phase 1 report focused on the identification of indicators that reflect *outcomes*, extending work undertaken in 1999 with an emphasis on completing the information on existing social and environmental conditions.

Phase 2 expanded the analysis of outcomes, and addressed the their underlying *causes*. This report draws the work of both phases together in a single report, to provide a comprehensive analysis of the State of the GTA in 2000.

Frameworks for State of the GTA Reporting

Sustainability

The rationale and approach to State of the Region reporting developed for the GTSB in 1999 proposed sustainability as the substantive framework for analysing the information collected as part of the State of the GTA reports².

The term “sustainable development” or “sustainability” has become well known internationally as a result of the United Nations-sponsored World Commission on Environment and Development in 1987, often referred to as the Bruntland Commission, after the Chair Gro Bruntland, then president of Norway.

In its report, the commission defines sustainable development as “development that meets the needs of the present without compromising the ability of the future generations to meet their own needs³.” Bruntland shifted many researchers and environmental groups away from a pre-occupation with short-term environmental protection to an interest in understanding the long-term capacity of the earth’s resources to sustain a certain level of economic growth.

Over the past years, the Bruntland definition of sustainability has been interpreted and elaborated upon by a number of scholars. The fundamental principle, however, that of responsibility towards future generations, still applies. In the context of the GTA, sustainability refers to the opportunity for future generations to enjoy, and in fact improve upon, the quality of life available today.

For this opportunity to be available, two important criteria must be met. First, the social, environmental and economic systems that make up the GTA region must be healthy; and secondly, equal consideration must be given to the health of each of the systems. This definition of sustainability is used in the report to guide the analysis of data collected.

In the GTA, the concept of sustainability has been adopted in a number of strategic and official plans at both the local and regional levels.

The Causal Framework

The development of indicators is a key part of State of the GTA reporting. The indicators form the basis for systematically monitoring and reporting on conditions and trends over time. They are the tools through which change can be followed up in subsequent reports and forums.

What is an indicator? Indicators are quantitative measures used to track phenomena over time or over a particular area. They provide the *pulse* of the situation. Indicators can be numbers collected through observation, such as the concentration of particulates in the air, or numbers collected through surveys, such as the percentage of people who feel safe walking alone at night.

What kind of indicators are used in State of the GTA Reporting?

The organizational framework adopted by the GTSB for State of the GTA reporting is called a causal framework.

It is based on the notion that effective policy interventions will best result from a State of the GTA reporting system that takes into account not only what is happening but why it is happening and what is being done to address concerns. This framework suggests three types of indicators: indicators that measure outcomes, indicators that measure root causes, and indicators that measure the action taken to affect change.

How Are Indicators Selected? The indicators in this report were selected using the following criteria:

- The indicators are conceptually and analytically sound. That is, their selection is based on solid research that demonstrates a relationship between the indicator and a desired outcome or condition.
- The measures are meaningful to policy makers and the public.
- Indicators are sensitive to changes over time. That is, when a change occurs, the indicator should fluctuate enough to demonstrate the shift.
- Data are available at a level of aggregation that is meaningful in the context in which it is being interpreted. That is, data are available at the GTA level, or at the level of reliable proxy.
- The indicators reflect the conceptual framework of a sustainable region.

Limitations of Indicators

Indicators, or measures, are numbers and they have some limitations. First, a common misconception is that indicators are objective and *speak for themselves*, when in fact they are a way to simplify a complex phenomenon. They are markers, which cannot necessarily reflect all of the complexities and subtleties associated with any particular issue dealt with herein, from health, to the environment or the economy.

Secondly, the selection of indicators and measures is itself a subjective task. The interpretation of the data must therefore be seen in that light. Thirdly, in some cases, the effectiveness of the indicator is limited by available data.

These limitations suggest that without a context or a timeline within which to interpret data, the measure itself may provide little or poor information for an analysis of the issue at hand. This report tries where possible to understand what the data show and how the information helps us to better understand the systems that make up the quality of life in the GTA.

Outline of the Report

An overview can be found in the Executive Summary, above. The detailed analysis of outcomes and causes follows in Section III, arranged by topic. Strategic implications of the analysis are drawn in Section IV, Conclusions. Detailed data for some of the analysis can be found in the Appendix.

¹ These objectives were defined in *State of the Region Reporting for the GTA, A Rationale and Approach*, prepared for and adopted by the GTSB in 1999.

² Metropole Consultants 1999. *State of the Region Reporting for the GTA, A Rationale and Approach*.

³ World Commission on Environment and Development 1987. *Our Common Future*. p. 43

III. The Analysis

1 Population Growth and Changing Social Composition

What are the trends?

Population Growth

Population growth brings new jobs, consumers, and investment, and offers the potential for improving the quality and diversity of urban life. However, very high rates of growth may have negative impacts on almost every aspect of public and private life. Rapid growth may overwhelm local governments, institutions and social service agencies. It also makes it even more difficult than usual to co-ordinate physical planning strategies, environmental protection and infrastructure provision. The challenge for policy makers is to accommodate growth in ways that reap the benefits while minimizing the costs.

Figure 1.1:
Population Growth in the GTA, 1966-1996



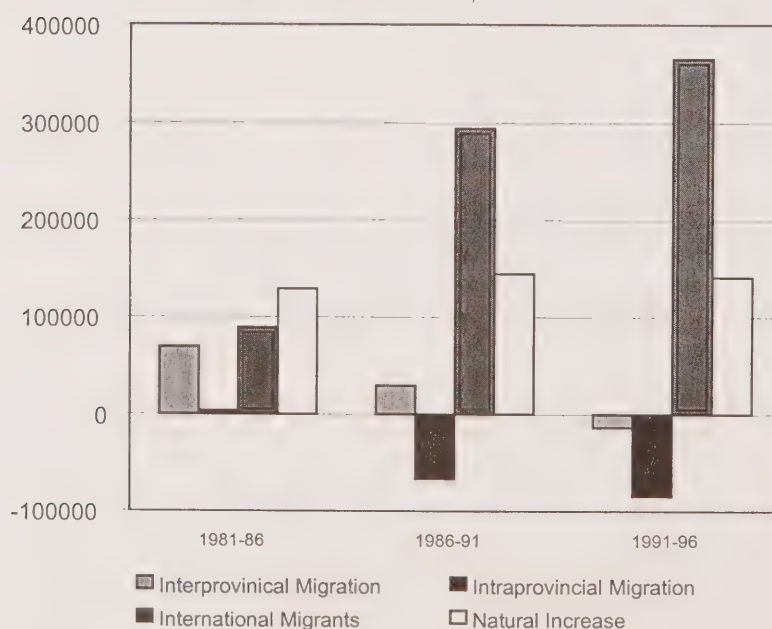
The GTA continues to experience a very high rate of population growth. The region's population roughly doubled in the last three decades, from under 2.5 million in 1966 to 3.7 million in 1986, and to over 4.6 million in 1996 (*Figure 1.1*). Current estimates (2000) place the regional population at nearly five million, and most forecasts point to a population of close to seven million within two decades.

What is driving the trends?

Components of Population Growth

What are the major factors contributing to population growth in the region and how have these changed over time? The major components of population growth have shifted dramatically over the last few decades (*Figure 1.2*). As fertility (birth) rates have continued to decline, so has the rate of natural population growth. As a result, net domestic and international migration have become the major components contributing to growth.

Figure 1.2: Components of Population Growth in the GTA, 1981-1996



During the last decade, immigration has become the driving force behind the region's population growth (*Figure 1.2*). During the early 1980s immigration accounted for under 50 per cent of the region's population growth; by the 1990s it represented over 94 per cent. Immigrants now account for more than 40 per cent of the GTA population.

Due to modifications in federal immigration policies and practices, this high rate of immigration continued through the early to mid-1990s, even when the regional economy was in a relatively deep recession and unemployment rates were high.

In contrast, net domestic migration (that is the difference between the number of in-migrants to the GTA from the rest of the country and the number of out-migrants) has been declining, and for most of the last decade has been zero or negative. The sharpest decline during this period was in terms of migration from the rest of Ontario to the GTA.

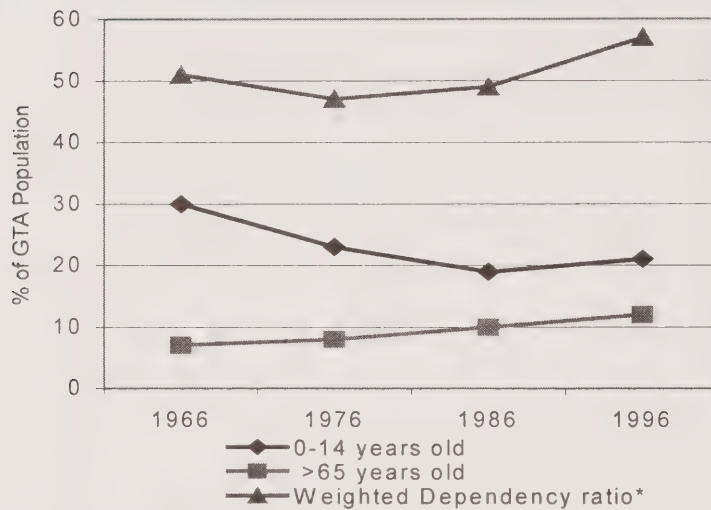
It is not clear why domestic migration to the GTA declined during this period. The two most plausible explanations are the severe recession and widespread employment losses in Toronto during the early 1990s, both of which would have discouraged in-migrants from other parts of the country and encouraged out-migrants. High house prices also continued to have an impact.

One effect of relatively higher housing prices in the GTA is to push people, especially new households, further out into the small cities and towns immediately surrounding the GTA. Part of this *overspill* phenomenon is due to the search for cheaper housing, but part is also attributable to lifestyle choices as well as retirement and pre-retirement movements. In most cases the effect is to increase long-distance travel and commuting to work.

In parallel with rapid growth, two other social processes have contributed to transforming the social character of the region:

- the demographic transition (*Figure 1.3*), and
- changes in family and household composition and lifestyle.

Figure 1.3:
The Demographic Transition and Levels
of Social Dependency in the GTA,
1966-1996



* Weighted by estimated average service costs: population >65 at three times the cost of those 14 years and under.

Demographic Transition

The period from 1948 to 1966 was a time of unusually high fertility rates, called the *baby-boom*. This created a huge population cohort (now aged 34 to 52, with the peak year at age 38), that is moving slowly through the age structure over time. In so doing, this large cohort is continuing to alter almost everything in its path – including labour and housing markets, and the demands for goods and services. With the subsequent sharp decline in fertility rates, the *baby-bust*, the GTA population is now also aging rapidly.

As a reflection of the sharp decline in fertility, the population aged 14 and under has declined from 30 per cent in 1966 to 19 per cent in 1986, but thanks to a small *echo-baby-boom* rose slightly to 21 per cent in 1996. In contrast, the proportion over 65 has increased from 7 per cent to 12 per cent and is likely to continue to rise, particularly as the leading edge of the baby-boom population reaches retirement age in 2010.

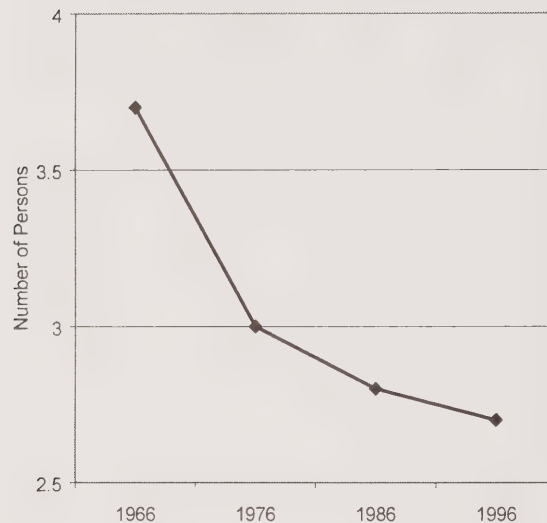
These two age cohorts are particularly important as indicators of social change because they define the social dependency level, and thus the costs of social service provision. The standard calculation of the dependency ratio, adding the proportion of children from 0-to-14 and the proportion of over-65 population, has shown a decrease through to the mid-1980s, largely because of the declining proportion of children. Since the mid-1980s, however, the dependency ratio has increased sharply, largely because of the growing elderly population.

What are the consequences of these shifts for society and for public policy? If we attach weights to these indicators based on estimates of the relative costs of providing services to these two populations, notably childcare and education for the young, and health and pensions for the seniors, the increase in the dependency ratio is even higher – from 49 per cent to 57 per cent. This figure could rise to 70 or 75 per cent within one or two decades. The cost of social services, and especially health care, will rise accordingly.

Changing Families and Households

The second trend that forms part of the challenge of accommodating population growth is the changing nature of the family and the composition of households. This trend, in turn, is a major factor contributing to a redefinition of the demand for housing and services, notably with respect to the proliferation of single-parent and other non-traditional households.

Figure 1.4: Average Household Size in the GTA, 1966-1996



(Non-traditional households, in the broadest sense, refer to all types of households other than the traditional nuclear family.) Such households have grown much more rapidly than the population as a whole over the last three decades.

While the total population grew by some 90 per cent during the period 1966 to 1996, the total number of households increased by more than 154 per cent. New households translate directly into the requirements for new dwelling units.

In parallel, average household size has declined by 27 per cent, from 3.7 persons in 1966 to 2.7 in 1996 (*Figure 1.4*), but the rate of decline has since slowed. The highest rates of increase in household formation have been among the young and the elderly, but all age cohorts have shown an increase.

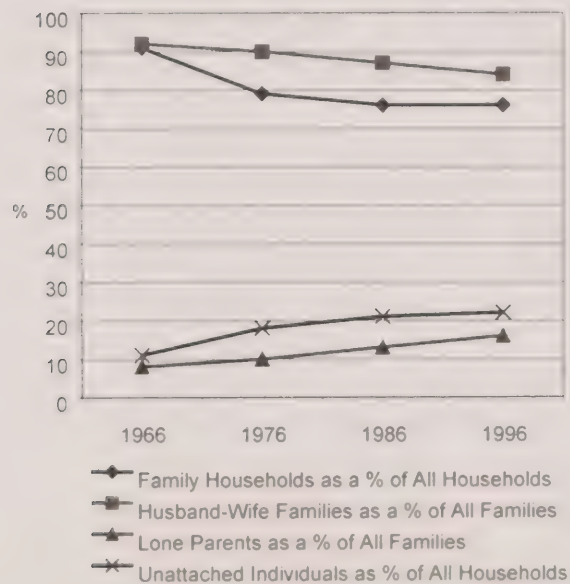
The composition of households has also changed over time (*Figure 1.5*). This shift is a result of complex changes in age structures, female labour force participation rates, social attitudes and lifestyles, and in response to easier divorce laws.

Most of the increases in rates of new household formation have been in small, non-traditional households, and specifically in non-family households (i.e. those households with one person, and those whose members are not related by blood or marriage). As a proportion of all households, family households have declined from 91 per cent to 76 per cent.

Among family households, the proportion classified as husband-wife families has also declined, but at a more moderate rate (from 92 per cent to 84 per cent).

In contrast, lone parents almost doubled as a proportion of family households, from 8 per cent to over 16 per cent. In parallel, one-person households (unattached individuals) also doubled as a proportion of all households, to 22 per cent.

Figure 1.5: Changing Household and Family Composition in the GTA, 1966-1996



There is, however, recent evidence that the rate of new household formation has begun to decline, especially among the young. This appears to be due primarily to employment problems during the early 1990s and continued high housing prices and rents.

There is little that local or regional governments can do to influence the rate of population growth and even less so with respect to rates of social change. These trends are largely the outcomes of changing attitude and lifestyles, and in the case of the GTA, federal immigration policy.

At a minimum, however, a more detailed monitoring of rates of household formation is needed to provide a consistent index of social change and an indicator of how individuals are faring in the housing market.

2 Economic Productivity and Jobs

What are the trends?

Employment

Quality of life surveys consistently rate having a job that is satisfying and that provides an adequate income as a key component of quality of life. A strong performance in the area of jobs indicates a strong economic system in the GTA, a sign that the economic system is sustainable.

This section looks at jobs from two perspectives:

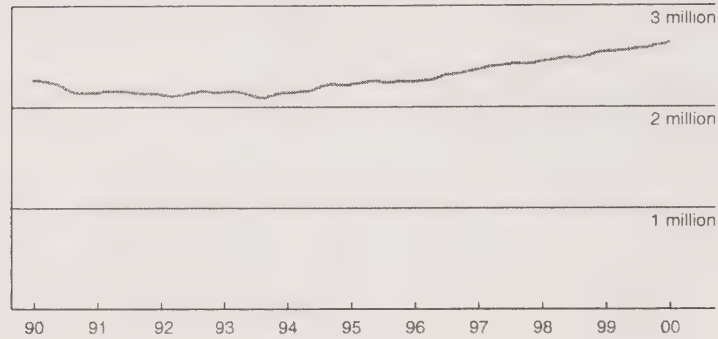
- The first indicator uses the number of persons 15 years or older who are employed as a measure of employment growth in the GTA¹.
- The second indicator uses the reported monthly unemployment rate as measure of unemployment in the GTA.

As the 1999 State of the GTA report showed, the 1990s were a turbulent decade for job growth and the unemployment rate in the GTA. The GTA lost close to 150,000 jobs to the downturn in the early part of the decade and did not start to recover until mid-1994.

With minor fluctuations, the growth trend that began in 1994 continued into the year 2000 (*Figure 2.1*).

In July 2000, 2,644,000 GTA residents held jobs. While employment growth dropped slightly on average in Canada from June to July, it continued to grow in the GTA and on average in the rest of Ontario². Since July 1999, jobs in the GTA have grown by almost 4 per cent. It is anticipated that 4.1 million jobs will be located in the GTA by 2031, an increase of 78 per cent over the 1996 total of 2.3 million³.

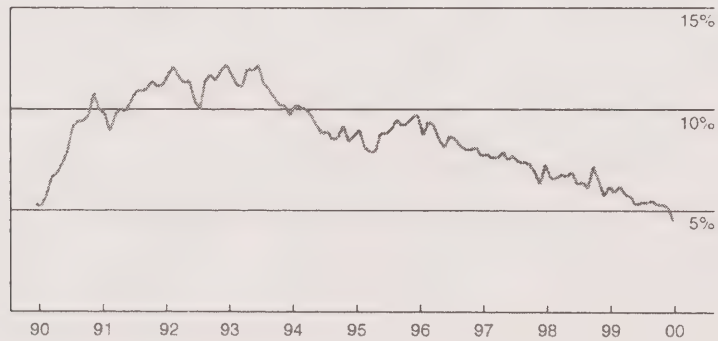
Figure 2.1: Employment in the GTA 15 Years+, Seasonally Adjusted



Source: Statistics Canada

The 1999 State of the GTA reported that after several years of stubbornly high unemployment, even over a period of sustained growth, the GTA's unemployment rate appeared to at last be edging downward. This downward trend has continued into this year (*Figure 2.2*). In July 2000, the unemployment rate stood at 4.5 per cent in the Toronto CMA.

Figure 2.2: Unemployment Rate in the GTA



Source: Statistics Canada

Most recently, in the months of June and July 2000, the unemployment rate for Canada has edged up slightly once again. However, the unemployment rate for the GTA appears to be continuing to decline.

How are jobs distributed across the GTA? Over the past 20 years, employment growth has shown a pattern of decentralization of jobs and employment clusters.

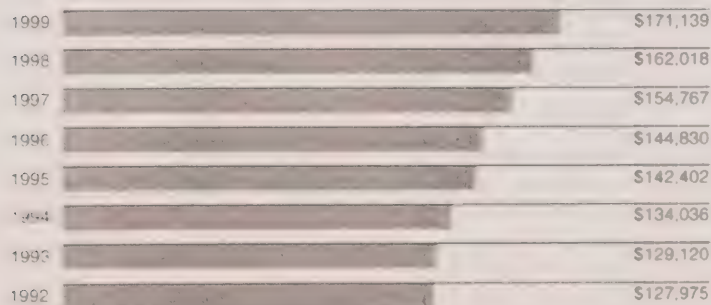
A recent analysis of the geographical structure of employment in the GTA highlights the highest growth rates in the outer suburbs of the GTA⁴. Well over 55 per cent of job growth in the GTA has taken place in the outer suburbs, 18 per cent in the core and 21 per cent in Toronto's inner suburbs of Etobicoke, North York and Scarborough.

Economic Productivity

A strong economic system is one that is able to generate wealth and add value to the goods and services it produces. Measuring economic productivity helps us understand the economy's ability to generate the wealth needed to sustain an expanding economy within a growing region.

Regional Gross Domestic Product is used to measure the value of output from all activities transacted in the GTA⁵. The measure provides an indication of the strength of the economy and can be used to compare the GTA with other regions and with the national average.

Figure 2.3: Estimated Gross Domestic Product of GTA (Millions)

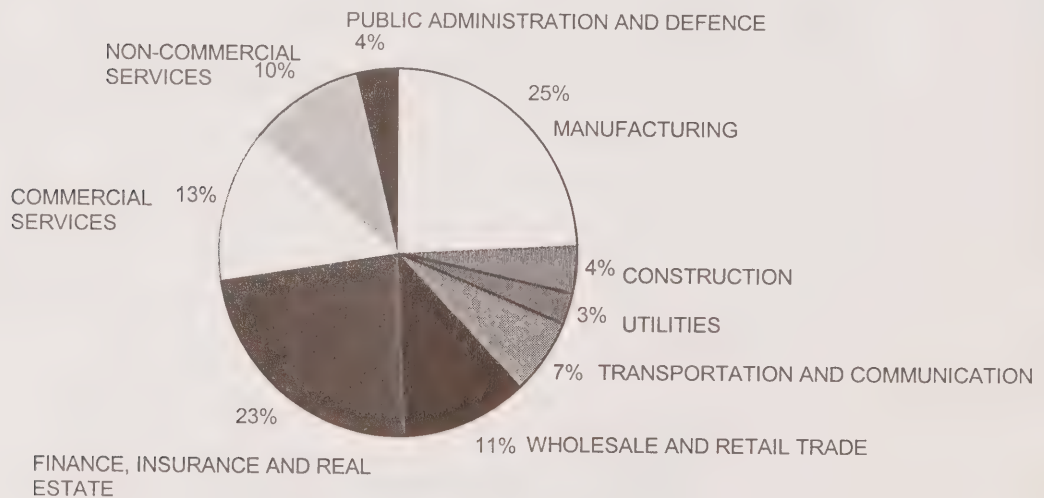


Source: Strategic Projections Inc.

The recession in the early 1990s saw the GDP of the GTA fall and then plateau until mid-1994. GDP has been rising steadily since mid-1994 at a steeper rate than the growth rate of jobs in the GTA. In 1999, the GDP stood at \$171.1 billion, up 25 per cent from \$127.9 billion in 1992 (*Figure 2.3*). The average GDP per worker was \$58,554 (constant \$1992) in 1996⁶.

An examination of GDP across different sectors shows the strongest shares of GDP are accounted from the manufacturing and finance, insurance and real estate sectors (*Figure 2.4*). They account for almost half of the entire GDP of the region⁷. This distribution is similar but slightly more pronounced than it was a decade ago. Services represent a smaller proportion of GDP than their share of jobs.

Figure 2.4: GDP by Sector,
Toronto CMA, 1998

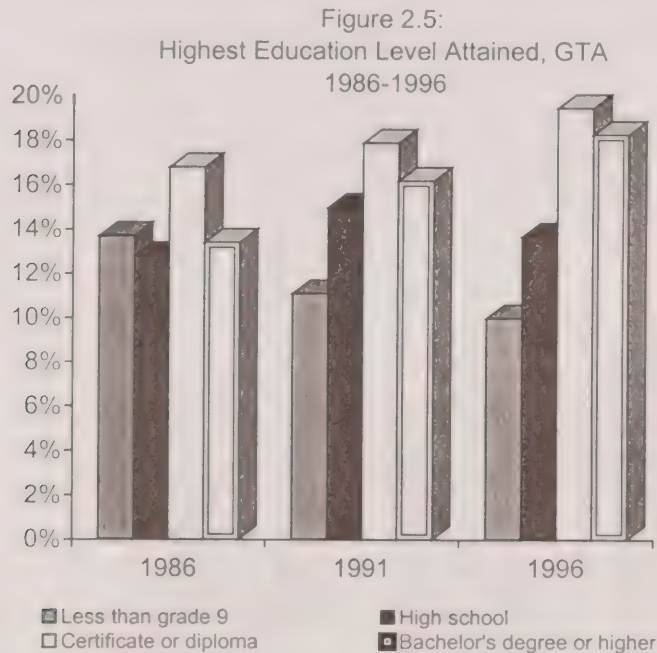


Source: Conference Board of Canada

What is driving the trends?

Education

An educated workforce is the most important foundation for economic prosperity in the age of the knowledge economy. Between 1986 and 1996 the general level of education within the GTA labour force has steadily improved (*Figure 2.5*). This is one of the major factors underlying the growth in the region's overall productivity.



Source: Statistics Canada Census of Population

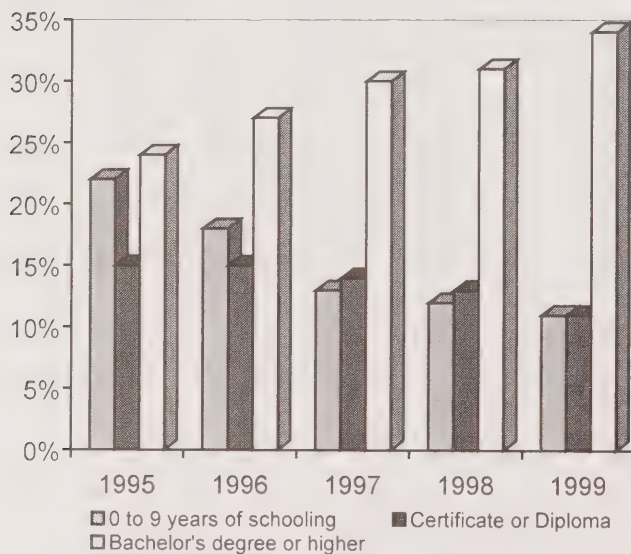
The proportion of working age population with college certificates or diplomas or university degrees has continued to rise over this period. At the same time, the proportion of the workforce with less than Grade 9 education has declined sharply. These trends augur well for the GTA's transition to a knowledge-based economy.

Immigration and "Brain Gain"

As Canada's largest destination for international immigration, the GTA has the potential to benefit from a sustained influx of highly educated and talented new Canadians. Statistics on educational attainment for immigrants to Toronto indicate that new entrants to the GTA labour market from abroad have, if anything, even higher qualifications than the regional average (Figure 2.6).

The challenge for public policy, now well recognized, is to ensure that the talents and qualifications of these newcomers are fully and rapidly applied within the regional economy.

Figure 2.6: Immigrants to Toronto CMA by Highest Level of Education, 1995-1999



Source: Citizenship and Immigration Canada Facts and Figures 1999

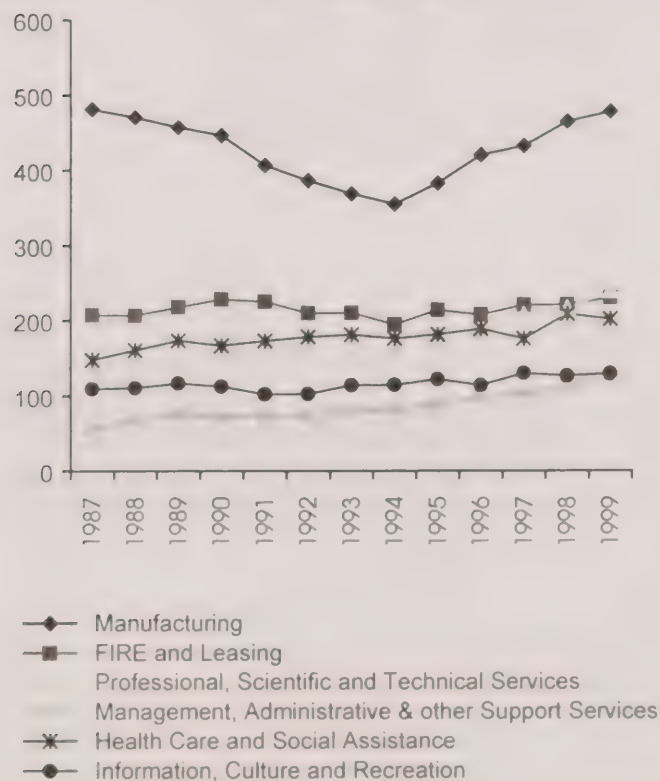
Economic Structure

Despite a decade of turbulent change during the 1990s, the economy of the Toronto region remains uncommonly well balanced between manufacturing and service activities.⁸

This balanced structure contributes to the economy's resilience in the face of continuing challenges and shocks. Moreover, in both of these areas, there has been a marked shift towards more knowledge-intensive products and activities.

Employment in higher value-added activity such as manufacturing, financial services and other higher-order professional, technical and managerial services has increased fairly steadily since 1994 (*Figure 2.7*). This has had a positive impact on both overall job creation and productivity in the region.

Figure 2.7: Employment in Key Industries, GTA, 1986-1999



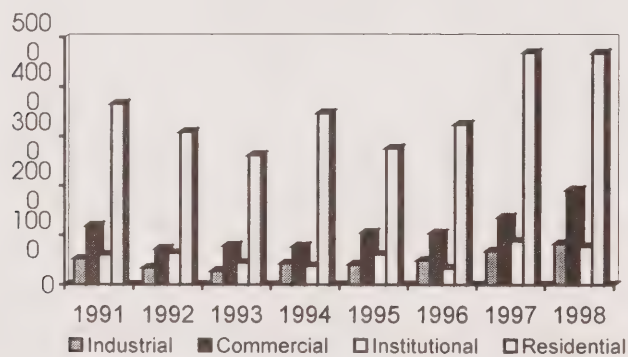
Source: Labour Force Historical Review, Statistics Canada

The growth in professional, scientific and technical services as well as in cultural activities suggests that the creative capability of the GTA economy continues to improve.

Capital Investment and New Technology

Another key determinant of productivity and competitiveness is capital investment. Using the value of building permits as a reasonable measure of overall investment, it is clear that firms in both the industrial and commercial sectors of the GTA have been increasing their expenditures during the second half of the 1990s (*Figure 2.8*). The impressive growth in residential building activity has also made a major contribution to the region's economic recovery over this period.

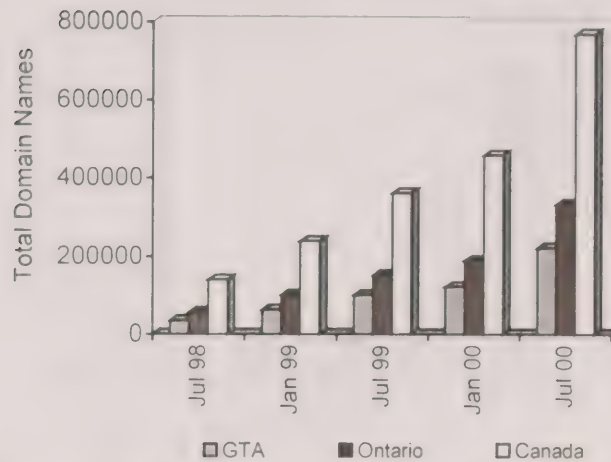
Figure 2.8: Value of Building Permits, GTA, 1991-1998



Source: CMHC

The growing use of Internet technologies in the GTA indicates that the rise of e-commerce and “new economy” activities is gathering steam. This development is unfolding at a faster rate in the GTA than in the rest of Ontario or Canada (*Figure 2.9*). Furthermore, recent data confirms that the prominence of Internet-based activity within the Toronto region is actually growing at a faster rate than in the top 10 U.S. cities.

Figure 2.9: Growth in Internet Activity



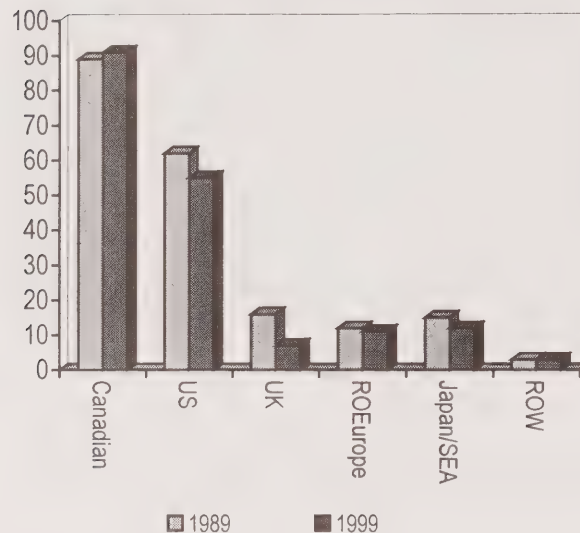
Source: Ontario Ministry of Economic Development & Trade

Foreign Direct Investment

Direct measures of foreign investment are not available at the metropolitan level. One way to gauge the level of activity of foreign-based firms in the region is to monitor the number of head offices. While the number of Canadian-owned head offices has increased marginally between 1989 and 1999, this has been more than offset by a drop in foreign-based head offices in the GTA (Figure 2.10).

This declining presence of large foreign-owned firms may be related to organizational changes following NAFTA as well as corporate restructuring on a global scale. Nevertheless, it suggests that the prominence of foreign investment in the region may be on the decline. Therefore, the growth in regional employment since 1994 may be primarily attributable to expansion by domestic firms. Such conclusions should, however, be regarded as tentative and subject to further in-depth examination of this important issue.

Figure 2.10: Number of Head Offices by Ownership, GTA, 1989-1999



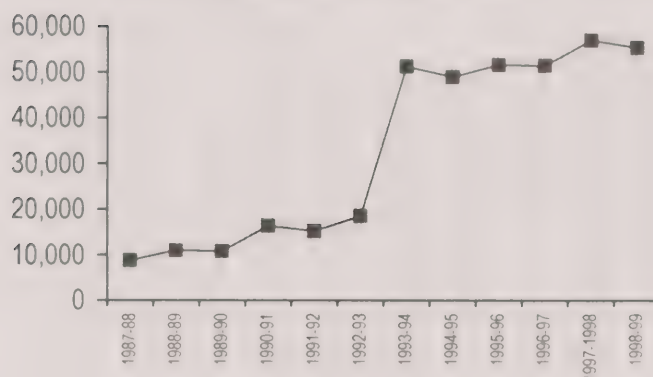
Source: Financial Post 500

Innovative Capacity

Long-run economic performance is closely linked to investments in the innovative capacity of the region. One key measure of this is the volume of research and development activity, which is acknowledged by national and provincial governments, as well as by international organizations such as the OECD, as the single best indicator of investments in innovation. Within the Canadian “system of innovation,” universities play a central role as sites of research and development, which is funded by both the private and public sectors.

Private firms have sharply increased their funding of R&D activity at universities in the GTA, helping to increase the resources available for university researchers (*Figure 2.11*).

Figure 2.11: Private Business Funding of R&D
at Universities in the GTA, 1987-1999

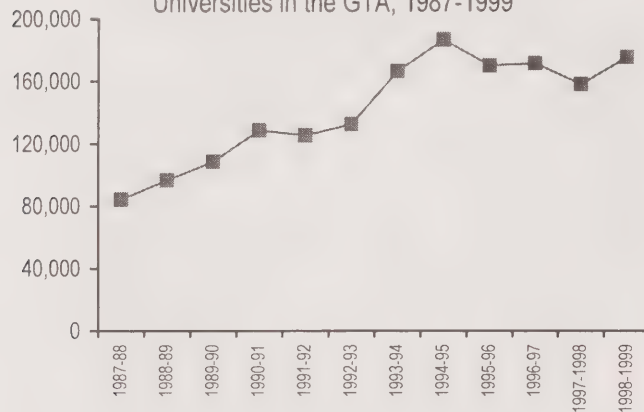


Source: CAUBO Financial Reports

Public investment in R&D at universities has also been growing consistently since the early 1990s (*Figure 2.12*). Since the public sector remains the most important source of research funds for the university sector, this bodes well for the long-term job-generating capacity and productivity growth in the region.

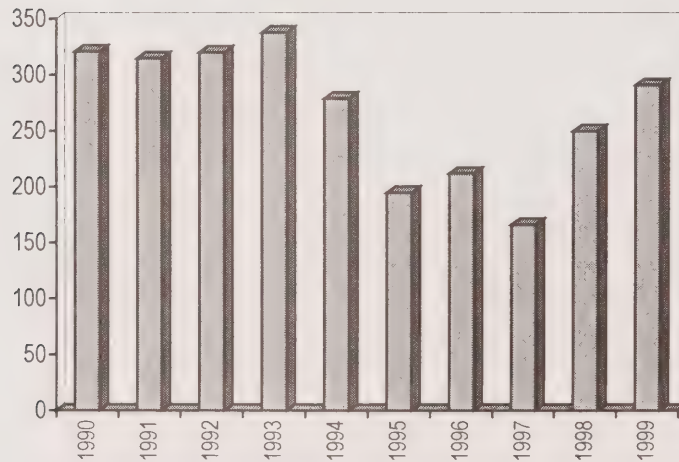
While investment in R&D represents an important input to the innovation process, it is also necessary to track the outputs of this effort. Patents represent one valuable measure of research output. Although the annual number of patents generated in the GTA declined between 1993 and 1997, the last few years have seen renewed growth (*Figure 2.13*).

Figure 2.12: Total Government R&D Funding to Universities in the GTA, 1987-1999



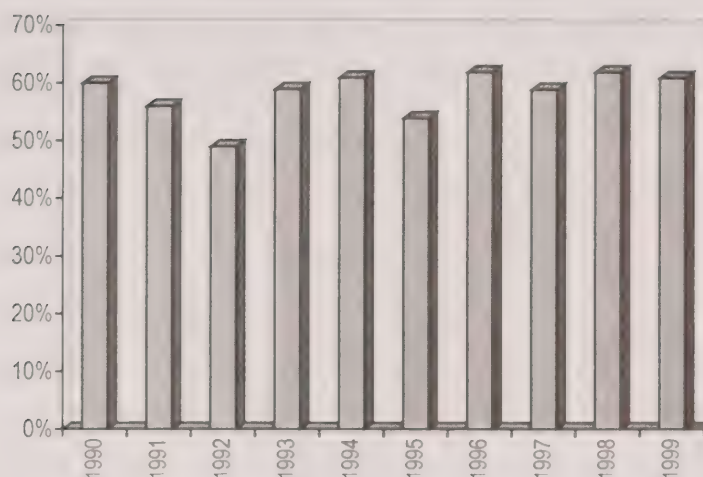
Source: CAUBO Financial Reports

Figure 2.13: Registered Patents, GTA, 1990-1999



Source: Patent Office, Ottawa

Figure 2.14: GTA Patents as a Percentage of Ontario Patents, 1990-1999



Source: Patent Office, Ottawa

When one analyzes GTA patenting activity as a share of the provincial total, it becomes clear that the region has held its own fairly steadily over most of the 1990s, accounting for roughly 60 per cent of Ontario's patents (*Figure 2.14*).

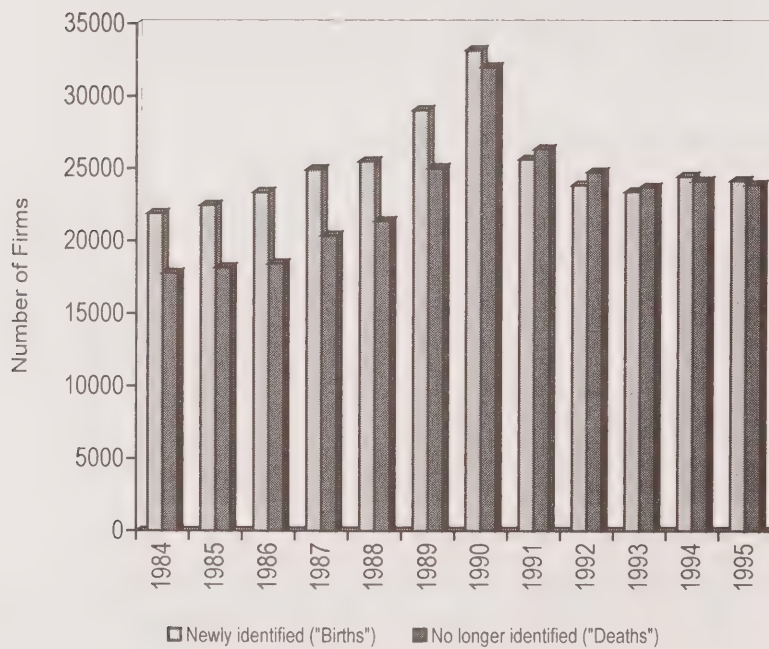
Considering that the GTA is home to 42 per cent of the province's population, this indicates the extent to which innovation-generating activity is clustered in the region.

Dynamism and Entrepreneurship

New firm formation constitutes one of the most crucial sources of vitality and dynamism for a regional economy. As the data on firm demographics show, the region's job-generation performance corresponds strongly with the rate at which new businesses are created (*Figure 2.15*).

While firm “deaths” exceeded “births” during the period from 1991 to 1993, the data for the next two years indicate the beginnings of a recovery. Given the importance of this measure of entrepreneurship, it will be useful to continue to monitor the region’s firm demographics on an ongoing basis as new data become available.

Figure 2.15: Firm Demographics, GTA, 1984-95



Summary and Overview

The GTA economy has undergone profound macroeconomic and structural change since the late 1980s. Many of the conditions needed to enable a continued transition to higher value-added, more knowledge-intensive economic activities (which generate higher incomes) have been laid in place.

Educational attainment has risen steadily. Specialized, higher-order services such as scientific, technical, professional, managerial and financial services, as well as creative activities, are also on the rise. There is also solid evidence that the “new economy” is rapidly growing in the GTA, and innovative activity, whether measured by inputs (the volume of R&D) or outputs (such as patents), appears to be well established.

As for Toronto’s role in the wider continental and global economy, trends in foreign direct investment (as measured through head office activity) indicate that domestically owned businesses headquartered in the region have become more prominent in the wake of the restructuring experienced during the 1990s.

This can be seen in both a positive and negative light. On the upside, the growing prominence of home-based firms (a trend which is also suggested by the recent recovery in new firm formation rates) bodes well for the region. Home-based firms perform the large majority of their highest-order functions (such as managerial decision-making and research and development) at home, leading to the production of high-quality employment opportunities and well-paying jobs in the GTA.

At the same time, the apparent decline in foreign-based headquarter activity raises some questions about the continuing attractiveness of the region as an investment site.

Nevertheless, it is clear that the continued future prosperity of the GTA will depend on several key determinants: its ability to produce, attract, and retain well-educated and talented labour; the quality of its natural and built environment; its continued success at balancing social diversity and harmony while minimizing socio-economic polarization; the vibrancy of its cultural life and institutions; the quality and supply of infrastructure supporting transportation and communications.

Each of these issues is addressed in following sections of this report.

¹ Toronto and Oshawa CMAs used to approximate GTA. Oshawa and Toronto CMAs combined excludes the City of Burlington, Brock Township and Scugog Township, and includes Orangeville and Mono from Dufferin County, and New Tecumseth and Bradford West Gwillimbury from Simcoe County.

² Statistics Canada. *Labour Force Survey*.

³ Greater Toronto Co-ordinating Committee , p.10

⁴ Outer suburbs corresponds to the band of cities and towns around Toronto. See Gertler, Meric. *A Region in Transition: The Changing Structure of the Toronto Regional Economy*. University of Toronto. Neptis Foundation Study. p. 14

⁵ In this case the Toronto CMA is used as a proxy for the GTA.

⁶ Gertler p. 19

⁷ Gertler, Figure 2.11

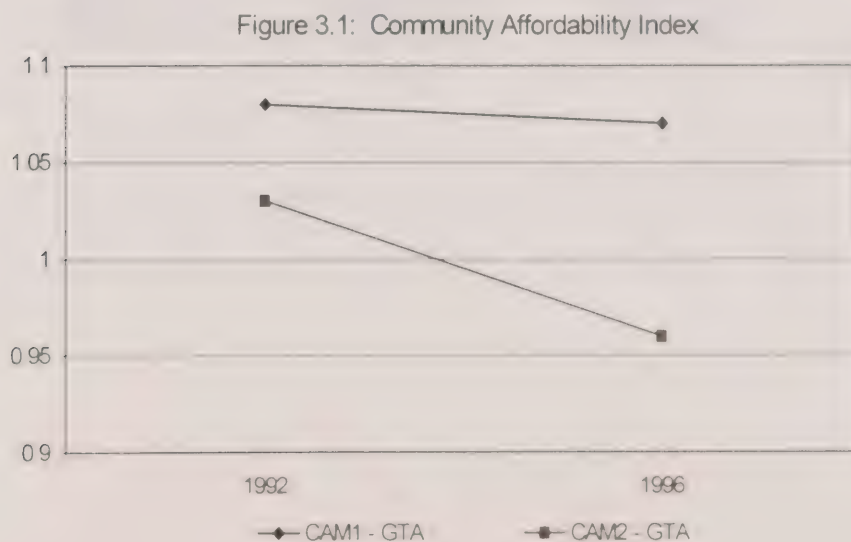
⁸ Gertler, pp. 5-8

3 Community Affordability

What are the trends?

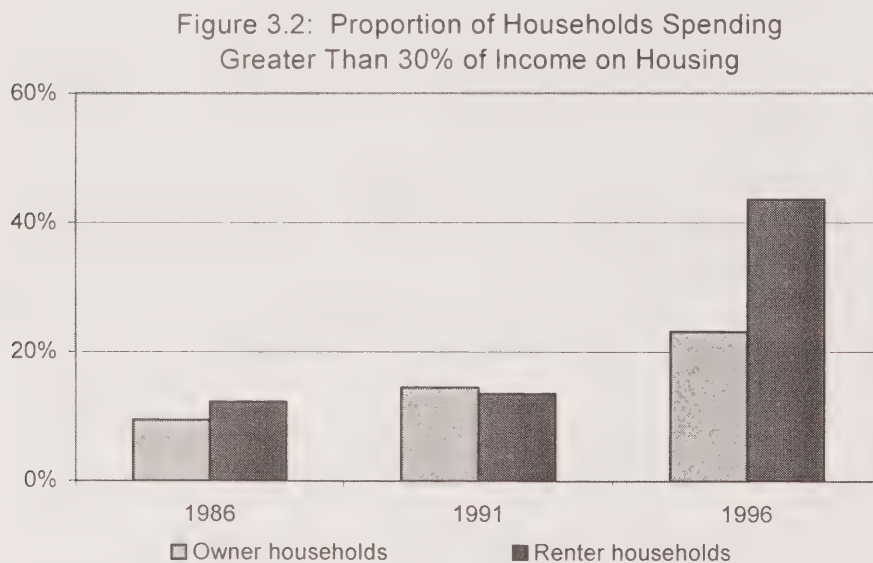
The issues of housing and community affordability are complex, and pose difficult measurement problems. There is no single, widely accepted definition or indicator of affordability. Three measures are used here, the first two drawn from a recent survey by the Federation of Canadian Municipalities:

- Community Affordability Measure 1 measures affordability for the total population as a ratio of the median income of the total population to the cost of living of the average consumer¹. (The GTA level is based on a weighted average of the city of Toronto and the regions of York and Peel). The higher the CAM value, the more affordable the community.
- Community Affordability Measure 2 uses the median income of modest-income earners to measure affordability for the less well-off.
- Housing affordability measures the actual proportion of gross household income spent on housing.



The trends indicate that while the GTA was slightly less affordable in 1996 for the average person than in 1992, it became much less affordable for lower income earners (*Figure 3.1*).

Taken in context of other cities that participated in the FCM study – most large and some medium size city-regions – the GTA is neither the least nor the most affordable place to live in Canada for the average person. With the exception of the Vancouver area, the GTA is the least affordable place to live in Canada for lower income earners.



Source: Statistics Canada

On the housing front then, it is not surprising that housing affordability has declined for an increasing number of households. An increasing proportion of households spends more than 30 per cent of their income on housing (*Figure 3.2*). The increase is especially dramatic for renters. With the absence of new social housing traditionally provided by the province, these rates are likely even higher today than in 1996.

What is driving the trends?

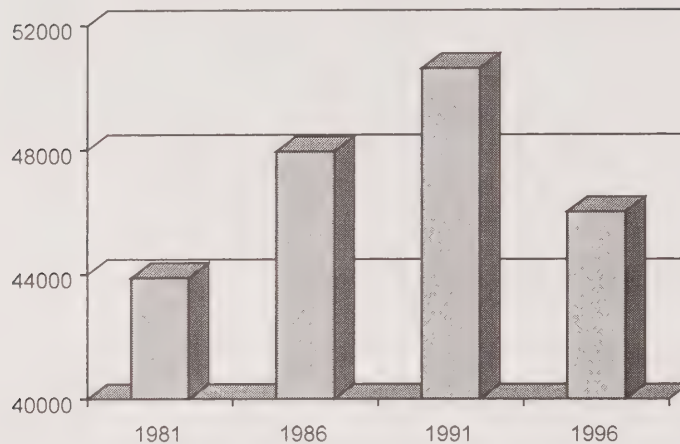
Trends in affordability, however measured, reflect shifts in two sets of factors: on the one hand, those related to income (changes in household composition and income distributions, as well as parallel changes in employment levels), and on the other hand, those related to the relative prices of housing and consumer goods (which in turn are related to demand and supply factors). Examples of these factors and their effects on community affordability are discussed below.

Real Incomes

Contributing to pressures on the GTA housing market, especially in the rental sector, is the fact that real (i.e. excluding the effects of inflation) median household declined significantly during the 1990s, following a period of substantial growth in the 1980s (*Figure 3.3*).

The rate of decline was also much higher for renters, whose incomes were already relatively low, than for owners. In 1996, the median income for GTA renter households was \$19,500 (in 1992 dollars), compared to \$58,700 for owner households.

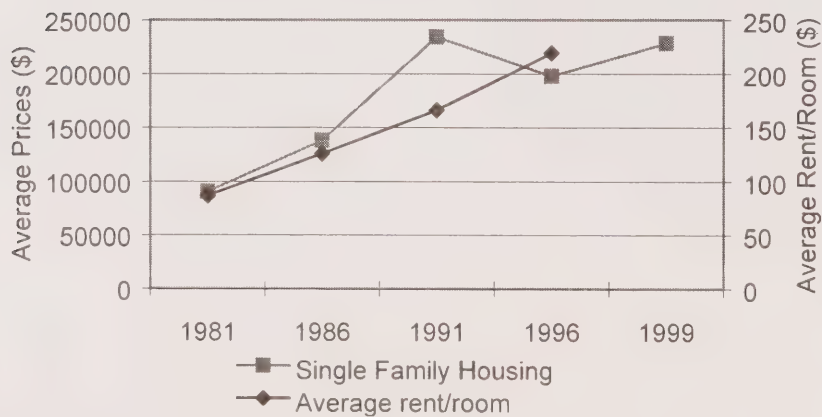
Fig. 3.3: Median Household Income, 1981-96,
Constant 1992 Dollars, GTA



House Prices²

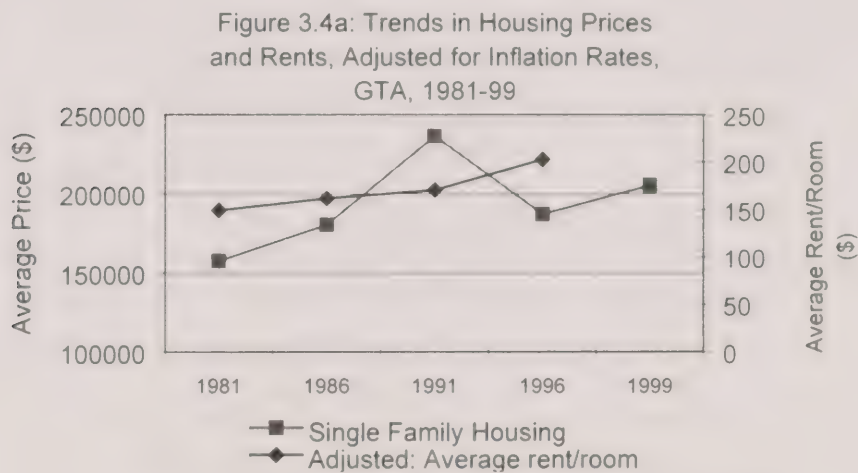
Average house prices over the 1981-1999 period have fluctuated widely depending on the business cycle, unemployment levels and real interest rates (*Figure 3.4*). The principal temporal pattern was the explosion in house prices in the late 1980s and the dramatic drop after that.

Figure 3.4: Trends in Housing Price
and Rents, GTA 1981-99



Average prices reached a peak of \$273,000 in 1989, and then dropped to \$234,000 in 1991 and to \$198,000 in 1995-96. This represents a decline of 28 per cent between 1989 and 1996.

Prices have been increasing again since the mid-1990s, and especially since 1998, reaching \$243,000 in 2000. They are, however, still below the pre-recession peak of 1989.



Note: \$ (deflated by Toronto CPI for all consumer items with 1992=100)

During the recession of the early 1990s, real incomes dropped, but average house prices dropped even more. Combined with interest rates that have remained relatively low, the result has been that the affordability of ownership housing actually improved during the period, despite the fact that many households now spend more of their incomes on housing. This is primarily because they are consuming more housing, in both quality and in space per person.

Figure 3.5: Trends in the Cost of Living:
Consumer Price Indices for All Consumer
Items and for Owned and Rental Housing,
Toronto CMA, 1981-99



Source: Statistics Canada, CANSIM

Rents³

The same cannot be said of rental housing. Rents, measured here as the average rent per room, have also fluctuated with the business cycle, but have increased at a faster rate than ownership housing over the period (*Figure 3.4a*). By 1996, the latest date for which we have comparable data, average rents were 36 per cent higher than in 1981 in real terms (after subtracting the contribution of general inflation).

The fact that the average incomes – and especially the median incomes – of renters have declined significantly over this period, suggests that the affordability of rental housing for renter households has also declined.

Consumer Prices

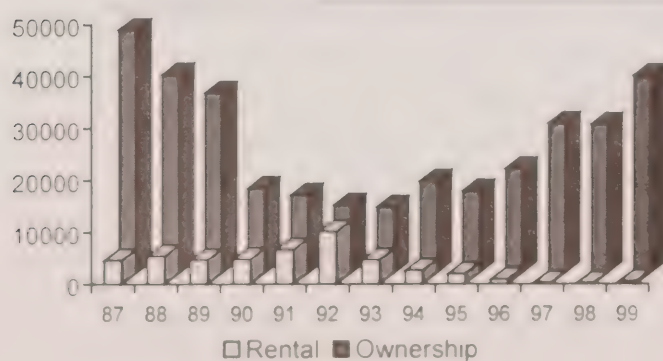
The overall consumer price index for Toronto (*Figure 3.5*) confirms these pressures on the rental market. The rent index was over 13 per cent higher, in real dollar terms, in 1999 than in 1992. In contrast, the CPI index for ownership housing was actually lower in 1999 than in 1992.

Supply of Housing

The supply of new ownership housing, a major factor contributing to improved housing conditions and affordability, has rebounded. Construction of ownership housing declined dramatically in the recession following the late 1980s boom. By 1994-95, construction began to pick up again as employment conditions improved. Since 1997, new housing construction has been very strong, standing at 38,000 units in 1999 (*Figure 3.6*).

The rental housing sector is another story. Construction of new, private rental housing has been especially weak in the period shown, with only a few hundred or fewer rental units constructed each year in the 1990s.

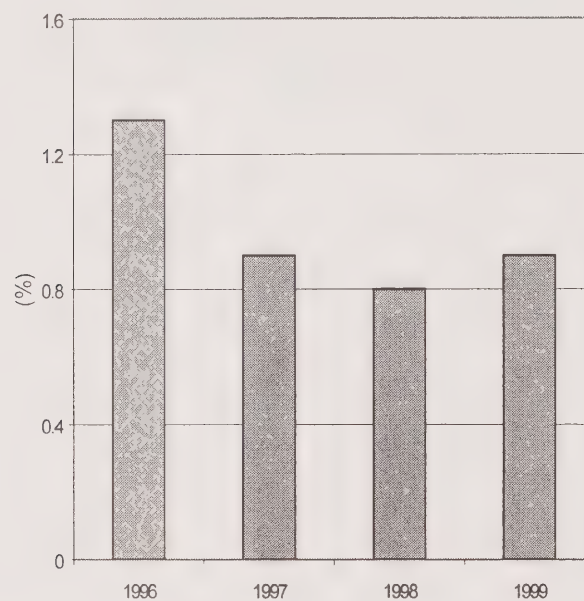
Figure 3.6: Housing Starts, GTA, 1987-99



Source: CMHC

While assisted housing made significant contributions to the new rental supply in the late 1980s and first half of the 1990s, since 1997 there has not been a single assisted unit constructed in the GTA. This is due to the termination of federal and provincial financial assistance.

Figure 3.7: GTA Vacancy Rates, All Units



Source: CMHC

In sum, several factors have combined to affect the demand and supply of ownership and rental housing, leading to the trends in prices and rents, and in affordability, described above:

- a) those adding to demand pressures:
 - rapid population growth
 - high rates of new household formation,
 - high levels of immigration;
- b) those adding to reductions in supply:
 - the relative absence of new rental housing construction,

- the decline in rooming houses,
- the conversion of older rental buildings to ownership housing,
- the cessation of social housing programs,
- continued high property tax rates, and
- revisions to landlord-tenant and rent regulations.

All of these factors have contributed to the increased pressures on the existing rental stock.

Evidence of the effects of these pressures can be seen in the continued trend of very low vacancy rates (*Figure 3.7*). These rates, now less than one per cent, are at historically low levels.

At the same time, the fact that the rental cost index did not rise even faster suggests that there is considerable (but still insufficient) rental housing available in the informal sector that is not captured by standard measures of supply and vacancies.

Clearly, we need to develop more effective means of monitoring changes in the existing housing stock, especially for the rental segments – both currently rented and potentially rentable units.

¹ Source: Canadian Federation of Municipalities.

² Based on MSL House Price Trends, Toronto Real Estate Board, and Statistics Canada microdata files (PUMF) for 1981, 1986, 1991, 1996. The region is the entire TREB service area, which is roughly similar to the GTA.

³ Based on MSL House Price Trends, Toronto Real Estate Board, and Statistics Canada microdata files (PUMF) for 1981, 1986, 1991, 1996. The region is the entire TREB service area, which is roughly similar to the GTA.

4 Equity

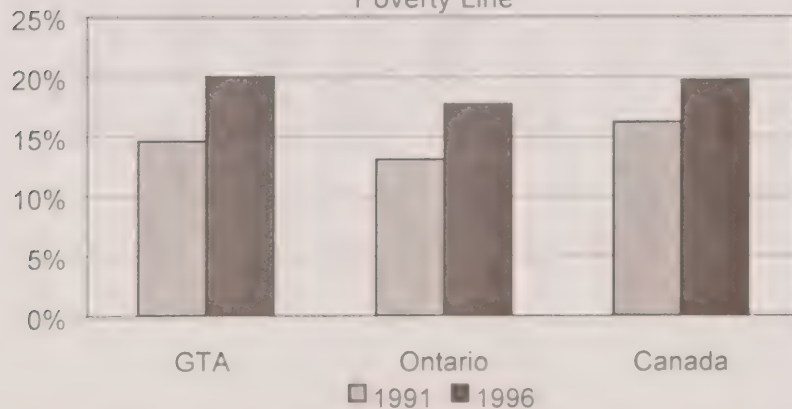
What are the trends?

Poverty

Despite Canada's relative overall economic wealth as an industrialised nation, a large proportion of Canadians live in poverty. Poverty is an indication that our prosperity and growth have not been shared equitably among the population. Poverty contributes to poor health and a myriad of social problems – homelessness, hunger, dependence on social assistance – that are more visible, and more acutely felt at the local level.

There is no standard measure of poverty, at least a standard that is widely and consistently applied over time. In this example, as a rough indicator of poverty, we use Statistics Canada data on “low income cut-offs,” which define the minimum income thresholds required by a household or family to secure the necessities of everyday life. These thresholds differ by size of household and by place of residence (e.g. higher thresholds in larger cities, lower thresholds in rural areas).

Figure 4.1: Proportion of People Living Below the Poverty Line

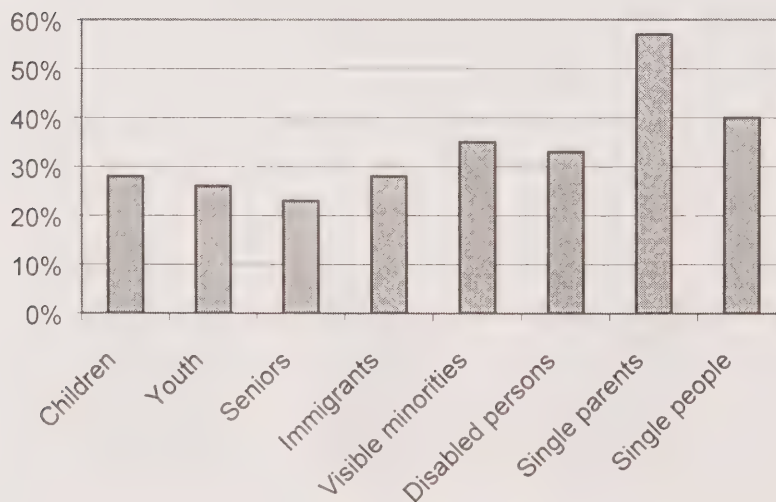


Source: Canadian Council for Social Development Urban Poverty

The evidence confirms that the incidence of low-income populations, taking into account local living costs, is higher in the GTA than in the rest of Ontario (*Figure 4.1*). Moreover, the proportion living below these thresholds (i.e. those assumed to live in poverty), increased significantly (from 14 per cent to 20 per cent) over the 1991-96 period in direct relation to the severe recession of the early 1990s.

These same trends do not affect all groups equally (*Figure 4.2*). The proportion of the population with incomes below the minimum threshold is highest for single parents, individuals living alone and recent immigrants – notably those who are also visible minorities – and the disabled. There is some evidence to suggest that the situation of single parents and recent immigrants (and refugees) has become worse during the late 1990s.

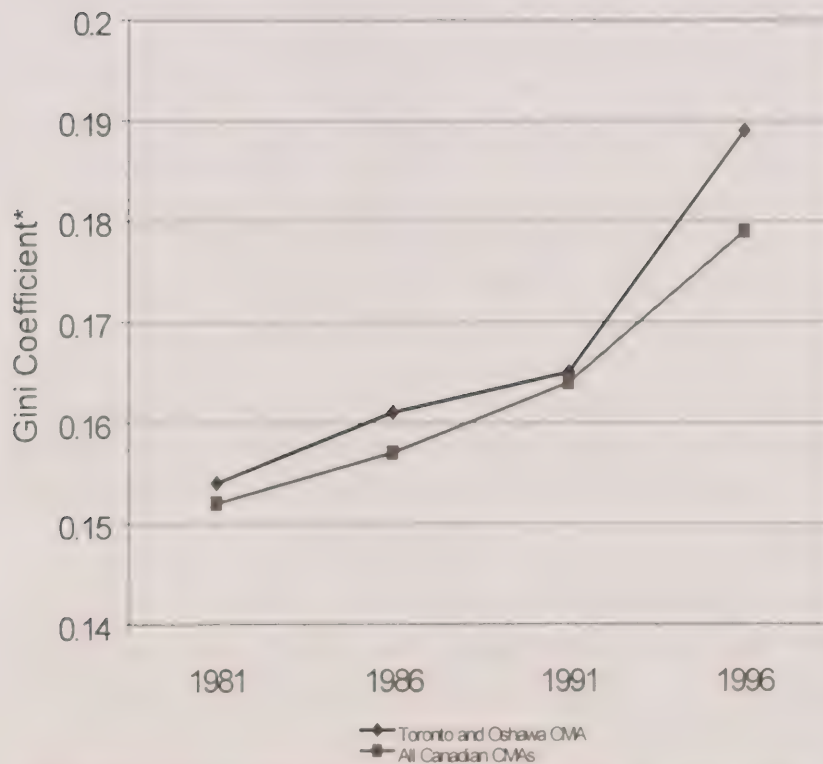
Figure 4.2: Poverty Rates in the GTA, 1996,
population subsections



Overall Income Distribution

One of the principal sources of change in the economic well-being of Toronto's citizens, and the most common determinant of social equity, has been the changing distribution of income. Despite its limitations, the income level measure captures – in one indicator – the combined effects on households of changes in employment and occupational remuneration (wages and salaries), living arrangements (household composition), and government policy (social assistance and transfer payments).

Figure 4.3: Changes in Inequalities in Total Household Income in the GTA, 1981-1996



Since the 1980-82 recession, inequalities in wages and salaries have steadily increased, but there has been a much slower increase in inequalities when measured in terms of total household income, at least until 1991 (*Figure 4.3*). The reason for this difference is that the growing wage/salary gap has been largely compensated for by redistribution through the tax system, social assistance and transfer payments to individuals.

Although the GTA has the highest average income among the larger metropolitan areas in Canada, that income has been unevenly distributed, across social classes and neighbourhoods.

Overall, the GTA has the third highest index of income inequality (using the Gini co-efficient) in Canada, after Montreal and Winnipeg¹. That index of inequality also increased by over 20 per cent between 1981 and 1996 compared to an increase of 17.8 per cent for all metropolitan areas in Canada.

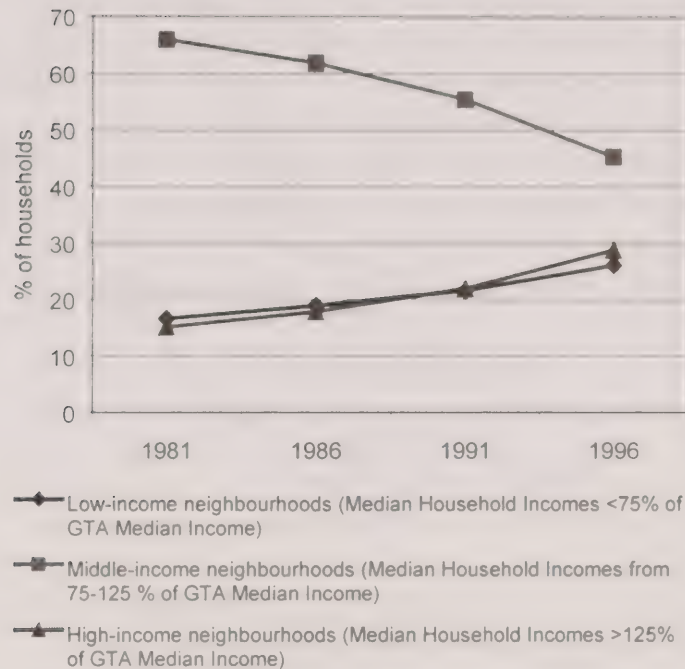
Compared to other metropolitan areas in Canada, the GTA has higher proportions of its households in every income category above \$60,000 than the national average, and lower proportions in every category below \$60,000². As discussed above, however, this does not translate into higher real incomes or lower poverty rates, given the higher cost of housing in the GTA.

As noted in the previous section, because of the deep recession of the early 1990s, real incomes (net of inflation) have not returned to their level of the late 1980s. As a result, the incidence of low-income, and thus relative levels of poverty, have increased, especially among smaller households and recent immigrants.

Income Variations within the Region

The region's social landscapes have also become more socially polarized, in terms of income levels at least, over the same period.

Figure 4.4: Spatial Polarization: Index of Neighbourhood Income Mix and Social Homogeneity in the GTA, 1981-1996



The proportion of households that live in predominantly low-income neighbourhoods increased by 9.4 per cent since 1981, while the proportion residing in middle-class (i.e. middle income) neighbourhoods declined by 20.7 per cent (*Figure 4.4*).

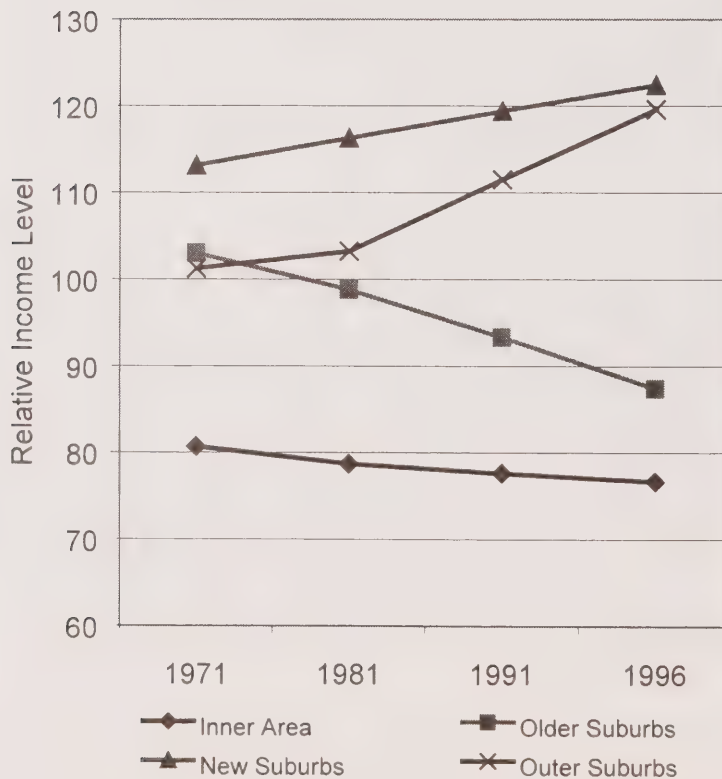
Thus, even during a period when national income disparities did not increase, that is through 1996, the population of Toronto (as in other urban areas in Canada) continued to sort itself into neighbourhoods that were more homogeneous by income. In part this sorting is due to choice, based on preferences for housing, proximity to family and cultural facilities, distinctive living environments and location.

For others, notably low-income households, single parents and recent immigrants, it is more likely to be due to the lack of choice in where to live.

Although it is difficult for governments to intervene at this scale, we do need to carefully monitor the changing social landscape and the evolving outcomes of the process of residential sorting. A city-region that is highly segregated by income and class cannot be a socially viable place in the long run.

Within the region as a whole there has also been a marked tendency toward a polarization of income between neighbourhoods in the inner area and older suburbs of the metropolis, and between the older and newer suburbs.

Figure 4.5:
The Changing Ecology of Income Inequality by Zone,
GTA, 1971-1996
GTA-wide Median Income = 100



(For present purposes the inner area is defined as including those neighbourhoods in which the housing stock is predominantly of pre-1946 vintage. The older suburbs are those built predominantly between 1946 and 1971. The new suburbs are the ring of the urbanized core outside the former Metro but including some newer neighbourhoods within the present city. The outer suburbs lie outside the urbanized core.)

Although there are wide differences in relative income levels within both the central area and the old and new suburbs, the inner area remains, on average, much poorer. Over the 25-year period from 1971 to 1996, median household incomes in the inner area declined by 4 per cent relative to those in the region as a whole. Median incomes in this area were only 77 per cent of the GTA-wide median (of \$49,293) in 1996 (*Figure 4.5*).

The new suburbs, in contrast, have become wealthier over time. Median household incomes in those suburbs rose by over 18 per cent relative to the GTA as a whole, to a level of almost 122 per cent of the regional median in 1996.

The sharpest declines in relative household incomes have been in the older suburbs. Those incomes dropped by over 15 per cent, to a ratio that is only 87 per cent of the regional median, between 1971 and 1996. In fact, the rate of decline of income in the older suburbs increased during the early and mid-1990s.

What is driving the trends?

The above shifts in overall levels of poverty, spatial equity, social polarization and economic well-being in the GTA mirror the intersection of a large number of factors, but especially important are the effects of:

- labour market restructuring
- higher unemployment rates
- the reduction in average household size, meaning that there are fewer income earners per household unit

- shrinking of the welfare state.

Among factors shaping the distribution of income and poverty in the region are:

- the aging of the population resident in the older suburbs,
- the location of social housing,
- the concentration of the most-disadvantaged immigrant and refugee groups in rental housing in neighbourhoods in the inner area and the older suburbs, and
- the relative loss of local employment in the older suburbs.

In contrast, the widespread construction of new condominiums in the downtown core, and the extensive renovation of many neighbourhoods of older housing, has meant that the central (downtown) core at least has seen a reversal of the trend to a relative decline in income levels since the late 1980s. The central core is becoming both richer and poorer at the same time.

The social consequences and policy implications of these trends are significant, but have yet to be carefully identified. These issues should be central concerns of subsequent State of the Region monitoring exercises.

¹ Based on combined metropolitan areas of Toronto and Oshawa (a reasonable approximation to the GTA that excludes only Burlington).

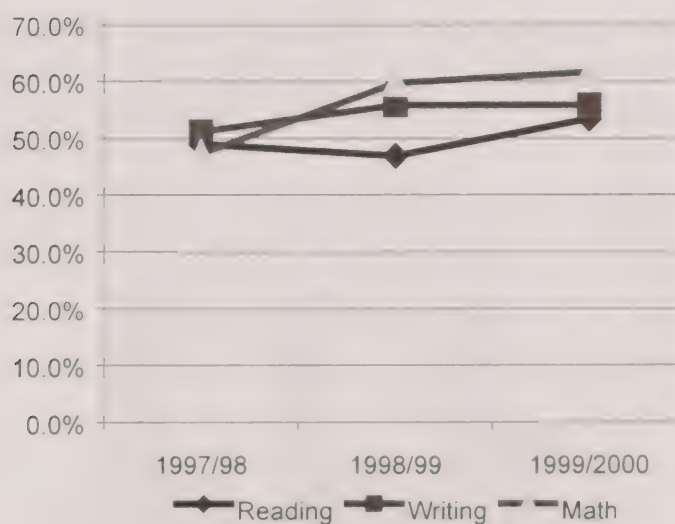
² The GTA is approximated with Toronto and Oshawa CMAs combined.

5 Education

What are the trends?

Education and literacy are increasingly fundamental not only to one's quality of life, but are taking on even greater economic importance in the knowledge-based economy, which relies on human intelligence, knowledge, creativity and other intellectual assets.

Figure 5.1: Gr. 3 Students Scoring Levels 3 or 4, GTA, 1997/98 to 1999/2000



Source: EQAO

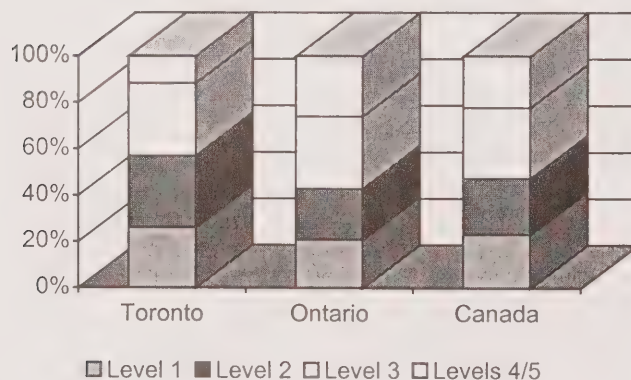
Early education has been shown to be critical to long term learning and achievement, and as such, is important to the long term well-being of the Toronto region, economy and society. The recent introduction of standardized Grade 3 testing offers the ability to track early learning over time. Figure 5.1 shows how GTA students have been performing over the last three years¹.

The data shows overall improvement in the percentage of students scoring at the highest levels over the last three years. It is somewhat difficult to interpret these results, given the short time series to this point. Improvements could reflect real gains, or simply better ability to deal with the tests themselves. However, over time, this indicator will provide a useful monitor of students' early performance.

Literacy is an important quality related to education. It is difficult to obtain comparable data on literacy over time. However, a major international survey was conducted in 1994, showing that Ontario performed well – better than the Canadian average (*Figure 5.2* – on the chart, Level 1 is the lowest level and Levels 4/5 the highest).

What is now the city of Toronto, however, did not perform as well, for reasons which will be explored below. The results of this survey did not differ significantly from one conducted in 1989².

Figure 5.2: Literacy Skills, City of Toronto, Ontario, Canada, 1994



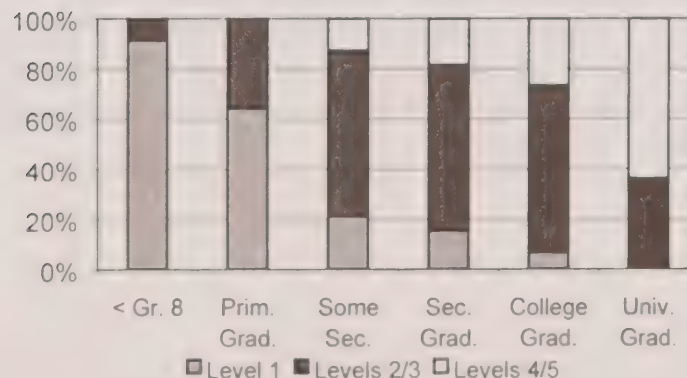
(Document scale) Source: IALS, Statistics Canada

What is driving the trends?

Early educational performance is influenced by a number of factors, such as early childhood care, the quality of education, and whether special needs are being met. With respect to the latter issue, given the high levels of immigration to the GTA, English language instruction would be particularly important. High levels of immigration may, in part, explain the city of Toronto's lower performance, compared to the Ontario results.

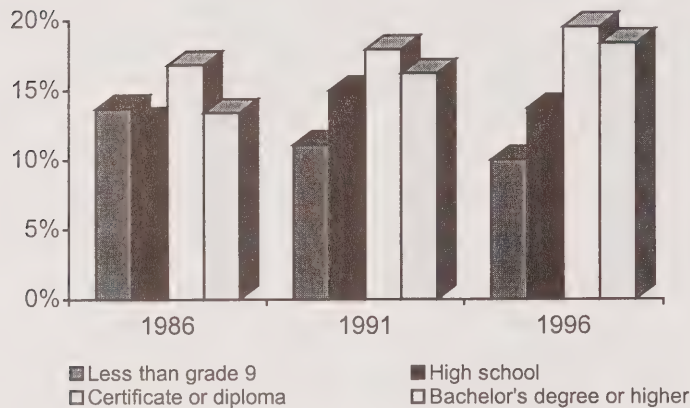
With respect to literacy, a recent, major OECD/Statistics Canada study identified the key factors determining literacy levels in Canada³. Level of educational attainment was by far the most significant influence on literacy. This relationship certainly holds true for Ontario. Figure 5.3 clearly shows that those with the lowest levels of educational achievement generally obtain only the lowest levels of literacy. As was seen earlier, educational levels have been continuing to improve in the Toronto region since 1986, which should bode well for improvements in literacy, all other things being equal (*Figure 5.4 and Section 2*).

Figure 5.3: Literacy and Education Levels,
Ontario, 1994



Source: IALS, Statistics Canada

Figure 5.4: Highest Education Level
Attained, GTA, 1986-1996



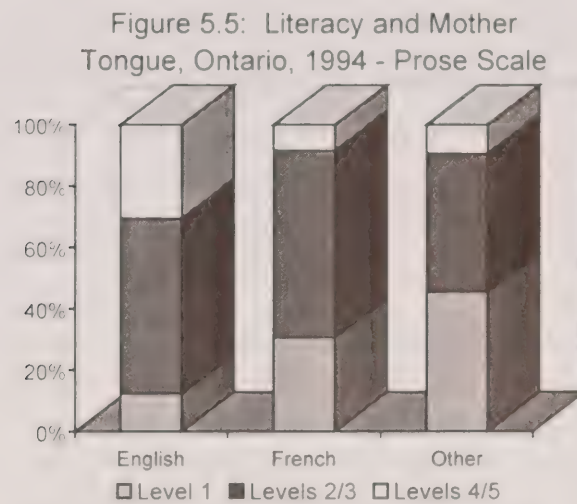
Source: Statistics Canada Census of Population

The second most important factor contributing to literacy levels was the extent of immigration where mother tongue was not one of the two official languages. That is, for many immigrants the cause of low literacy in English or French was not low levels of educational attainment, but lack of fluency in those languages. This relationship is reflected in Figure 5.5, which shows lower than average levels of English/French literacy for those whose mother tongue is not English or French.

A more detailed examination of literacy and Ontario's immigrants found that two-thirds of immigrants failed to reach Level 3, a level generally considered the minimum for functioning adequately in today's society. The corresponding rate among Canadian-born was 41 per cent.

EDUCATION

Indeed, even though younger immigrants have higher levels of education than younger Canadian-born, they nonetheless have a higher incidence of low literacy skills (64 per cent versus 26 per cent) – suggesting that lack of fluency in English or French is the main contributor to low literacy in this group⁴.



Source: IALS Statistics Canada - excludes those with French mother tongue taking English test

¹ Data combines results from the following school boards: Toronto DSB, Toronto Catholic, Durham DSB, Durham Catholic, York DSB, York Catholic, Peel DSB, Dufferin Peel Catholic, Halton DSB and Halton Catholic.

² The Literary Skills Used in Daily Activities Survey (LSUDA), 1989. Source: *Adult Literacy in Ontario: The International Adult Literacy Survey Results*, Literacy and Basic Skills Section, Workplace Preparation Branch, Ontario Ministry of Education and Training, 1998.

³ OECD/Statistics Canada (2000) *Literacy in the Information Age: Final Report of the International Adult Literacy Survey*, Paris: OECD.

⁴ *Literacy Profile of Ontario's Immigrants*, Literacy and Basic Skills Section, Workplace Preparation Branch, Ministry of Training, Colleges and Universities, September, 2000.

6 Safety

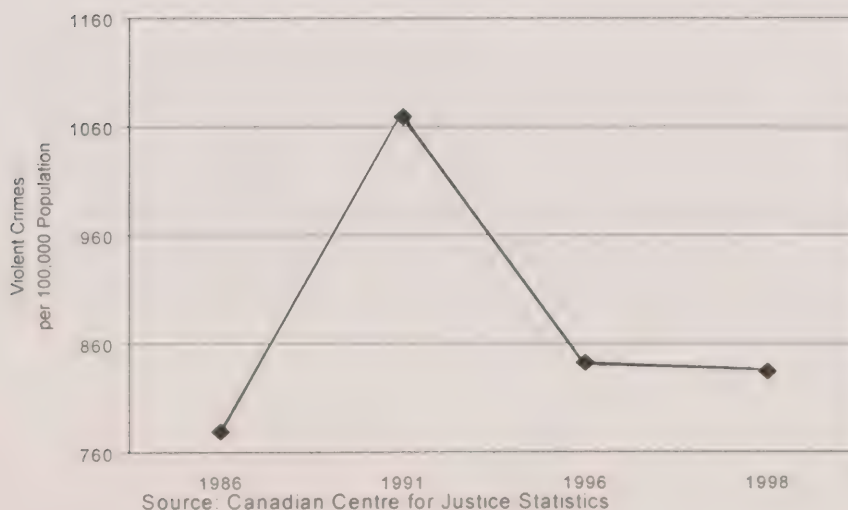
What are the trends?

Safety and security are essential components of well-being in any community and an integral part of our quality of life. Safety is an important part of the sustainability of our economic and social systems. A safe community is a key competitive advantage for the GTA over other large North American cities.

The violent crime rate in the GTA is used as the indicator for community safety. Violent crimes include homicides, attempted homicides, assaults and sexual assaults, abductions and homicides. Because not all crimes are reported to the police, particularly in the case of domestic violence, this indicator will underestimate the total number of crimes.

Violent crimes in the GTA increased into the early 1990s and have been decreasing ever since (*Figure 6.1*). This is a trend which can be seen across large Canadian cities as well as across Ontario. Overall, the GTA has a lower crime rate than the Montreal Urban Community and the Greater Vancouver Regional District.

Figure 6.1: GTA Violent Crimes per 100,000 Population



Lower rates signify that the GTA is a safer place to live than it may have been 10 years ago. This is a strength for the GTA; it positions the GTA as a good place to do business, to live and visit.

There is evidence, however, that fear of crime is increasing. Although the statistics on fear of crime vary from one study to the next, they consistently show that at least one-fifth of the population is fearful about walking alone in their neighbourhoods at nights. Studies have put that estimate as high as 42 per cent.

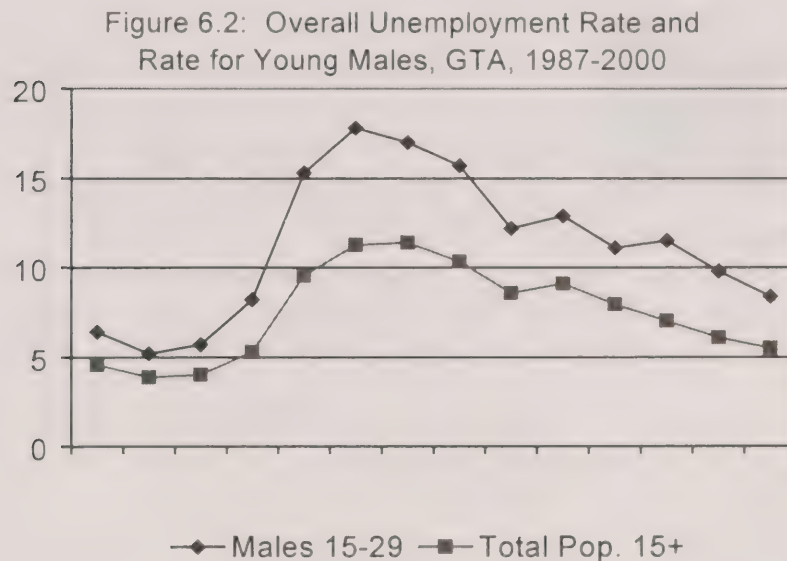
Fear of crime has implications for the way communities are designed (gated communities and mixed-use communities) and for transportation choices (fear of public transit at night) and hence for the health and sustainability of our communities.

What is driving the trends?

The determinants of crime are, of course, very complex. There is no one paradigm that forms a definitive explanation for crime. Most experts would agree, however, that the risk of crime varies according to certain circumstances, personality factors and social conditions¹. Various theories focus on factors such as economic disadvantage, exposure to norms and beliefs that support law-breaking, lack of appropriate social controls (police, courts, respectability), social disorganization at the community level, and opportunities for crime.

At a basic level, it has been said that crime rates are declining because demographic groups most likely to commit crimes (especially young males) are becoming a smaller portion of the population. However, the underlying set of conditions typically thought of as contributing to crime include factors such as unemployment (particularly among young males), poverty, income inequality and drug abuse – all of which have been correlated with incidence of crime².

Some factors commonly related to crime have been improving. As we have seen earlier in this report, unemployment rates have been dropping significantly in the GTA since about 1993. However, unemployment rates for young males, while also seeing improvement in the latter half of the 1990s, remain significantly higher than the average (*Figure 6.2*).



Source: Statistics Canada Labour Force Survey

We have also seen that incidence of poverty and income inequality appear to be increasing in the region, though we do not have accurate data for these factors post-1996, when the economic recovery proceeded apace and we might have expected some improvement (*Figures 6.3 and 6.4* – see also *Section 4*).

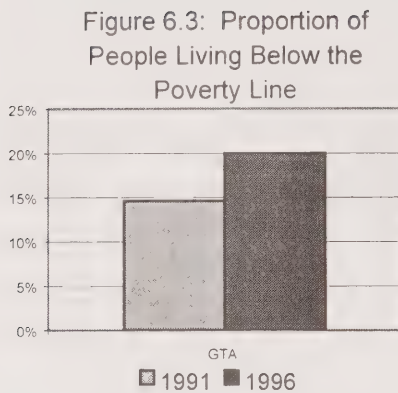
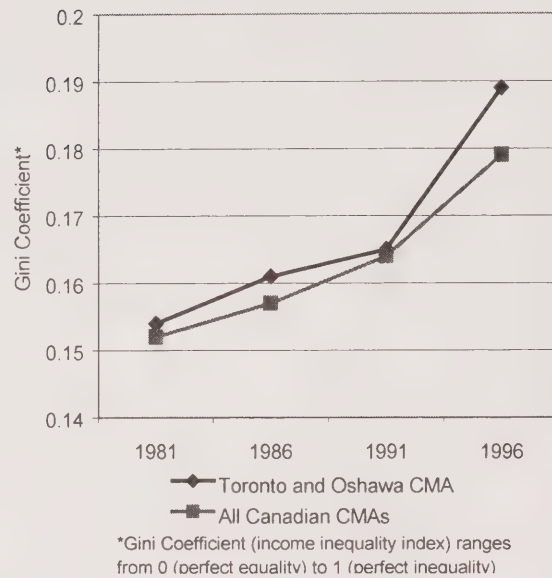


Figure 6.4:
Changes in Inequalities in Household
Income in the GTA, 1981-1996



¹ Canadian Centre for Justice Statistics, *Criminal Justice Indicators*, June 1997.
<http://qsilver.queensu.ca/rcjnet/crim-jus.pdf>

² See for example, Canadian Centre for Justice Statistics, *ibid*, and State of the City Bulletin on Community Safety, "A Safe City is a Healthy City", City of Toronto, August, 1997.

7 Health

What are the trends?

Three indicators serve here to represent trends in the physical health of GTA residents, and one to represent trends in mental health.

The infant mortality rate is a widely used indicator of the overall health of a population and the state of medical and other care, a high rate indicating poor overall health. The GTA's rate has generally been declining and a little below that for all of Ontario in recent years, as shown in Figure 7.1.¹ Both rates are similar to that for the whole of Canada (6 per 1,000 live births over the period 1995-1999). Worldwide, infant mortality rates vary between 4 (Japan) and 169 (Sierra Leone), with developed countries averaging about 9 per 1,000 live births.²

Figure 7.1:
Infant mortality, Ontario and
GTA, 1986-1997

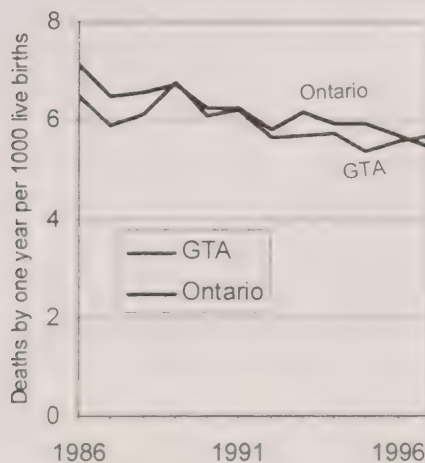
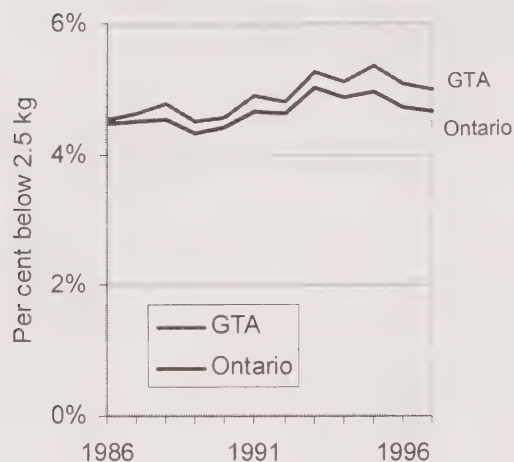


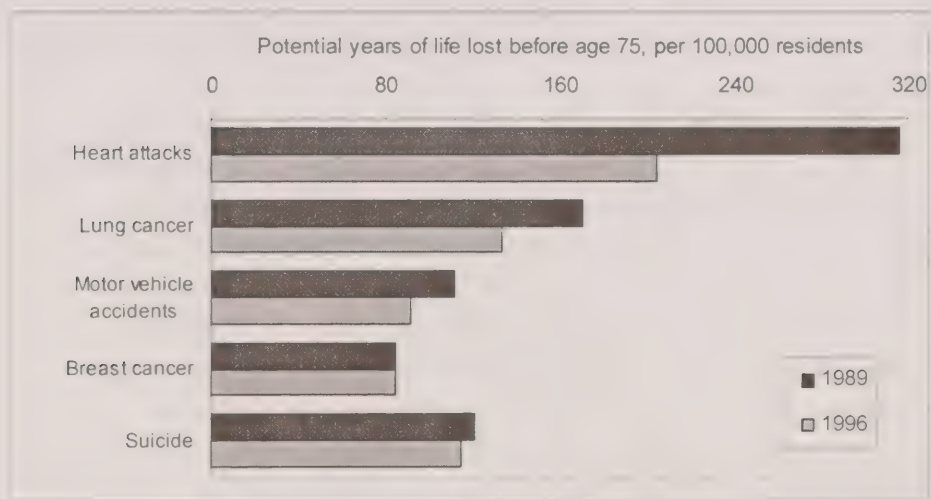
Figure 7.2: Incidence of low birth-weight among singleton births, Ontario and the GTA, 1986-1997



The incidence of low birth weight is an indicator of how well an infant will fare. Figure 7.2 shows that rates for both the GTA and Ontario have been increasing, that the GTA's incidence has been a little above that for Ontario, and that the difference has been increasing.³ Low birth weight can result both from a disadvantageous in utero environment (for example, from maternal malnutrition or smoking) and from advanced medical care that enhances pre-term survival. Thus, low birth weight cannot be used as an indicator of maternal well-being without further analysis. Moreover, the basis for the trends shown in Figure 7.2 is unclear. Whatever the reason for the increases in low birth-weight – poor maternal or good medical care, or both – infants born with low birth-weight tend to fare less well in later life. Thus, a rising incidence of low birth-weight could be an indication of later challenges for the persons concerned and for the health-care system.

Potential years of life lost is an increasingly used indicator of the general well-being of the population. It is essentially a measure of premature death, i.e., death before age 75. A death at age 35 represents 40 years lost; a death at 65 represents 10 years lost. Changes in this indicator between 1989 and 1996 are shown for the GTA in Figure 7.3, organized by the five leading causes of mortality before age 75.⁴ Only death from breast cancer is not showing a decline, although the decline in deaths by suicide may not be significant.

Figure 7.3:
Potential years of life lost in the GTA



At present, we do not have any good data upon which to develop useful indicators of mental health in the GTA. It is recommended that this area be looked at in further depth for future State of the GTA reporting.

In summary, the overall physical health of GTA residents aged less than 75 years appears to be improving, although the increase in the proportion of births of infants with low birth rate may presage future problems. No such statement can be made about the mental health of GTA residents. More types of data and better analyses are required.

What is driving the trends?

The apparent improvement in the physical health of GTA residents aged less than 75 years could result from numerous factors. Reduced incidence of smoking is a likely prominent factor, but improved nutrition, physical fitness, and medical care could also play a part.

However, the age profile of GTA residents is changing rapidly, as it is for the rest of Canada, with growing proportions of the population being older than 75 years. Older people are generally in poorer health than younger people. Accordingly, the noted improvements in the physical health of younger GTA residents may occur in tandem with increasing numbers of relatively infirm elderly persons. These shifts have important implications for the provision of health services in the GTA.

Changes in health care and health protection in Canada, including the GTA, are complex and controversial issues whose analysis is beyond the scope of this report. What is clearly required are better statistics on the health status of GTA residents and factors relevant to this status.

¹ The data in Figure 7.1 are from the Central East Health Information Partnership and MOHLTC Provincial Health Planning Database.

² *World Resources 1998-99*. World Resources Institute, Washington DC, Table 8.2, p. 258-259.

³ The data in Figure 7.2 are from the Central East Health Information Partnership and MOHLTC Provincial Health Planning Database.

⁴ Data for Figure 7.3 are from the *State of the GTA in 2000: Phase 1* report (GTSB, 2000), originally from the Central East Health Information Partnership.

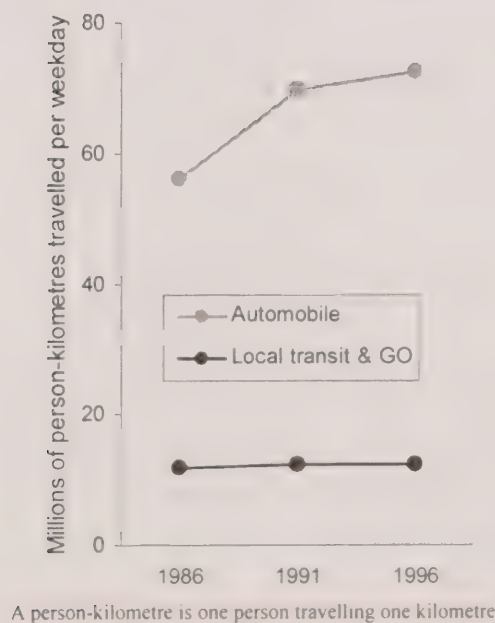
8

Transport Activity and Ease of Access

What are the trends?

Automobile traffic in the GTA¹ grew overall by 31 per cent between 1986 and 1996,² considerably ahead of the population growth during that period (21 per cent)³ and far ahead of the increase in road capacity (about 7 per cent).⁴ Commercial vehicle traffic also grew by about 30 per cent, although this estimate is less certain than that for automobiles because fewer good data are available.⁵

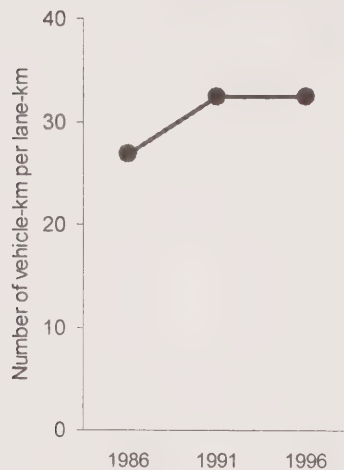
Figure 8.1: Travel trends on typical weekdays in the GTA



The overall number of trips by public transit fell by 1.2 per cent between 1986 and 1996. On average, transit trips were longer in 1996. Thus, the overall amount of travel by transit – i.e., person-kilometres travelled – increased by 5.5 per cent (*Figure 8.1*)⁶.

Figure 8.1 compares the amount of travel by car (including all personal vehicles such as vans and SUVs) and public transit (including GO) during typical weekdays in 1986, 1991, and 1996.

Figure 8.2: Overall congestion in the GTA, 1986-1996



A vehicle-km is one vehicle travelling one kilometre
A kilometre of road with two lanes in each direction
represents four lane-km

In 1986, 17.4 per cent of weekday travel was by public transit; by 1996, this had fallen to 14.6 per cent. Figure 8.2 provides estimates of the growth in usage of available road space (a measure of overall congestion).⁷ Congestion of many individual roads grew at much higher rates.

Figures 8.1 and 8.2 show a slowing of the growth in automobile use and congestion in 1991-1996 compared with 1986-1991. This was likely the result of economic conditions in the GTA during those periods (*Section 2*).

A key question is whether ease of access to desired destinations in the GTA has worsened or improved. Ease of access worsens when travel costs or travel time increase. Ease of access can be improved in several ways: for example, by shortening distances between origins and destinations, by improving public transit, and by reducing congestion.

There are no good data for the GTA on these various matters. What is available suggests that ease of access has worsened, more because travel times have increased than because real costs of travel have increased.

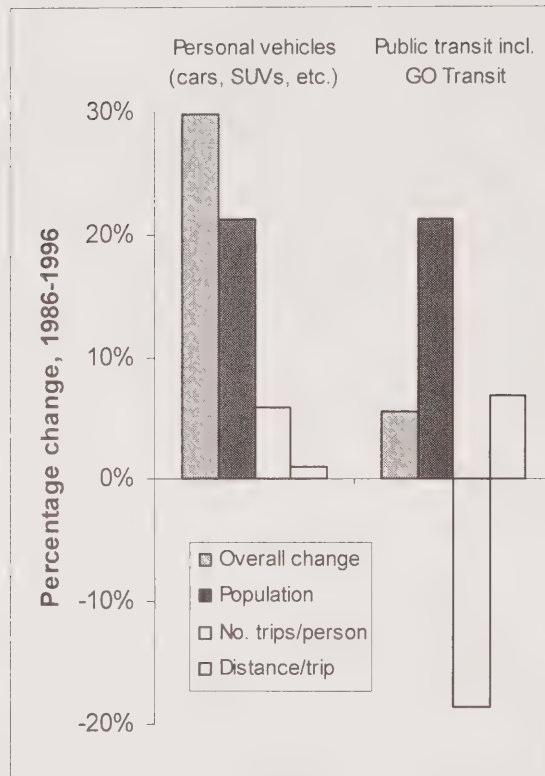
What is driving the trends?

The growth in the overall amount of travelling by car between 1986 and 1996 had three fundamental causes: (1) there were more people in 1996, (2) each person on average made more journeys by car in 1996, and (3) each journey was longer on average in 1996. The relative weights of the three contributing factors are shown in Figure 8.3 together with the corresponding changes for public transit.⁸

The increases in the numbers of automobile trips per person and in average trip length could be related directly to the ongoing decline in settlement densities and the effects of this decline, described here in Section 9.

Another approach to understanding what has been happening is to examine changes in the *purposes* of travel. The period 1986-1996 saw a relative shift away from work-related journeys and towards so-called discretionary journeys, i.e., journeys for shopping, socialization, and recreation.⁹

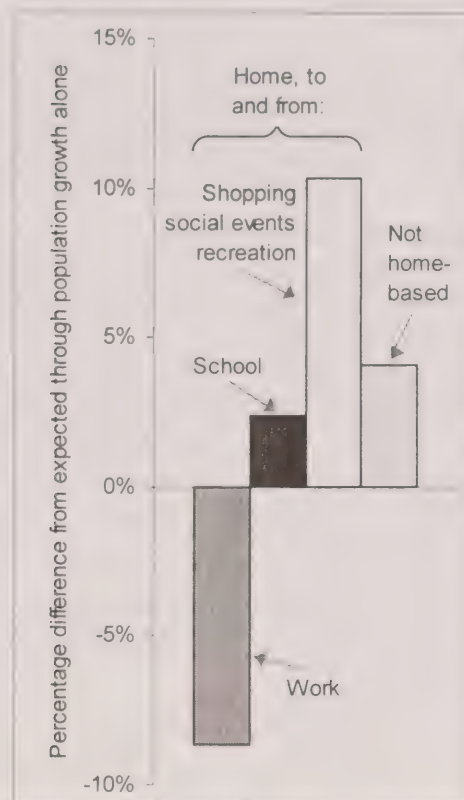
Figure 8.3: Changes in travelling by personal vehicles and public transit, and contributing factors



This shift is illustrated in Figure 8.4, which shows differences in travel purpose in 1996 from the changes that would have been expected on the basis of population increase alone.¹⁰

A disproportionately large part of the increase in discretionary trips occurred during peak periods. This helps explain why, even though the proportion of work-related journeys is down, there has been little relief in peak-period congestion. (Moreover, the actual number of work-related trips did increase, although not as much as might have been expected.)

Figure 8.4: Changes in trip purpose in the GTA



Discretionary journeys of all kinds are less likely to be made by public transit, which explains in part why use of public transit has not kept pace with population growth.

The increase in discretionary trips has an important potential implication that is not addressed by the GTA's travel surveys, which concern weekday travel only. It is that there may have been unusually large increases in weekend travel. Accordingly, the rate of increase in automobile use in the GTA may be considerably higher than is indicated in Figure 8.1, with correspondingly larger increases in transport-related air pollution (*Section 11*).

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- ¹ In this section alone, unless otherwise indicated, 'GTA' is taken to mean 'Greater Toronto Area and the Region of Hamilton-Wentworth (now the City of Hamilton)'.
- ² The estimate of the increase in automobile traffic comes from the *Transportation Tomorrow Survey* (1986, 1991, 1996), Joint Program in Transportation, University of Toronto.
- ³ For the increase in population, see the present Section 1.
- ⁴ The estimate of the increase in road capacity is based on Exhibit 3.19 and associated text of IBI Group, *An Assessment of Transportation Trends in the GTA: Transportation Trends Analysis*, October 1997.
- ⁵ The estimate of the increase in road freight traffic is based on Table 19 and associated text of "Strategic Overview of Goods Movement in the GTA", Technical Report #9 of *Towards a Greater Toronto Area Transportation Plan*, Office for the GTA, Ministry of Municipal Affairs and Housing, Government of Ontario, August 1997.
- ⁶ Figure 8.1 is based on the source in Note 2.
- ⁷ Figure 8.2 is based on the sources in Notes 2 and 4.
- ⁸ Figure 8.3 is based on the sources in Notes 2 and 3.
- ⁹ The increase in discretionary trips between 1986 and 1996 comprised a very large increase from 1986-1991 and a small decline from 1991-1996, again suggesting an influence of economic conditions.
- ¹⁰ Figure 8.4 is based on the sources in Notes 2 and 3.

9 Urban Form

What are the trends?

Achieving compact urban form has been adopted as a planning goal across the GTA. Compact urban form has many dimensions, but key among these are:

- higher density greenfields development
- the redevelopment of already urbanised but underutilised lands (“reurbanisation”),
- mixed use development, and
- the creation of centres, nodes and corridors throughout the urbanised area.

Density measures capture most of these dimensions, and at present, provide the most readily available means of indicating whether we are moving toward compact urban form in the GTA. It has been generally acknowledged that low density development in the GTA – as elsewhere – is problematic from several points of view, including:

- High levels of road traffic associated with lower density urbanization. They arise because distances to be travelled are greater in low-density areas and because public transit is less feasible there on account of low levels of ridership per operating hour and per operating kilometre.
- Low density development is associated with higher rates of public expenditure for urban infrastructure. These are chiefly for roads but also for other physical infrastructure, such as sewer, water and transit.¹
- Low-density development consumes large amounts of agricultural land. This increases the dependence of GTA residents on imported produce, thereby increasing their vulnerability to high fuel costs and other disruptive factors.

- Low-density development is associated with higher rates of resource use, particularly fossil fuel use, with associated effects on the local and global environment. The greater fuel use is chiefly for transportation, particularly by personal vehicles, and for heating and cooling buildings, which are generally larger in low-density areas.²

Given the population pressures described in Section 1, above, it is not surprising that the urban area of the GTA has been expanding. The urbanized part of what is now the GTA increased in area from 482 km² in 1967 to 1,732 km² in 1999, out of a total GTA area of 7,162 km². That is, the urbanized portion of the GTA increased by 3.6 times, from 7 per cent to 24 per cent of the total.

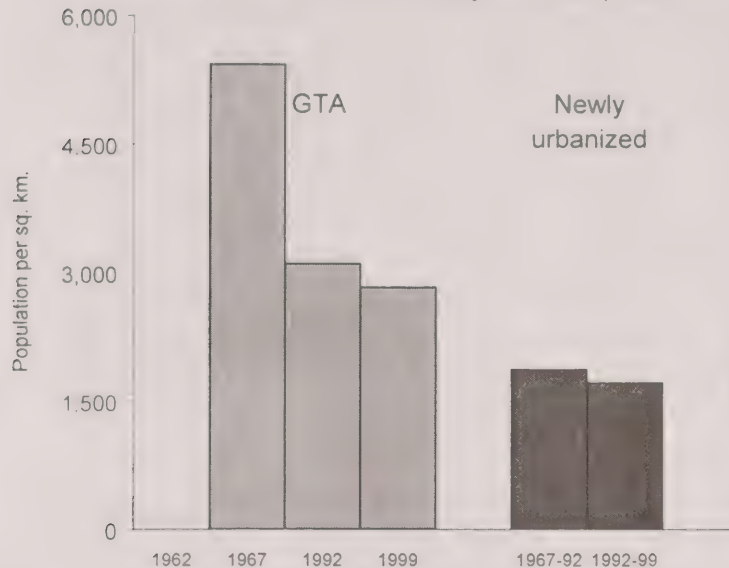
During the same period, the population increased by 1.9 times - from 2.62 million to an estimated 4.91 million. In other words, the urbanized area of the GTA grew at a much faster rate than its population.

Figure 9.1 shows trends in gross population density from the late 1960s to 1999, based on data for three years for which analysis of aerial surveys has provided data on the extent of urbanization in the region.³

Over the period 1967-1999, the gross population density of the total urbanized area (old and new) within the region fell by almost half, from about 5,400 to 2,800 residents per square kilometre. This is because as new areas have been developed, they have tended to be built at lower densities than existing areas.

Figure 9.1 shows, for example, that there was a dramatic drop in densities in the 1967 to 1992 period⁴. In 1967, the population density of the region was at about 5,400 persons per sq. km. Development occurring in the period occurred, on average, at about 1875 persons per sq.km, bringing the total density of the region down to about 3,100 persons per sq. km. by 1992.

Figure 9.1: Population density of the urbanised parts of what is now the GTA, and of newly urbanised parts



Since 1992, the data suggests that gross population densities of newly urbanised areas have continued to fall, occurring on average at about 1,700 persons per sq. km., further lowering GTA-wide densities. However, further analysis of the numbers shows that the rate at which densities have been falling has been slowing somewhat since 1992⁵.

Figure 9.2 shows population density within the region. (Note that a gross population density of 4,000 persons per sq. km. is often viewed as a minimum level required to support basic transit service⁶. Areas on the map with lower densities are therefore not very transit-supportive.) Figure 9.3 shows employment density (by place of work) within the region. Figure 9.4 shows total urban density, obtained by adding population to employment. This latter measure is probably the best density indicator for a region, because it includes employment density, and is most closely related to the implications of density, such as land consumption, transit supportiveness etc. This measure also takes mixed use into account – using this measure, areas that have both employment

and residential use will register an increase in total density, while single use areas will of course not do so. Each of these maps shows that, generally speaking, density is related to the period of development – the newer the area, the lower the density tends to be.

The above analysis has referred to gross population densities. Another density measure is “gross residential densities” – based on the number of residential units divided by the area of gross *residential* land only. Analysis shows that, in some parts of the GTA, gross residential densities have been increasing slightly. In other parts of the GTA, gross residential densities have declined or remained relatively stable⁷.

A third density measure is *net* residential density, that is, the number of units divided by the *net* area of residential lots only, excluding public lands such as parks and roads, and excluding employment lands. Data on net residential density is not available consistently across the GTA. However, some available data shows that net residential densities have been increasing in some parts of the GTA, including in Halton and York Region⁸.

The map in Figure 9.5 shows the locations of the urban expansion between 1967 and 1992 and between 1992 and 1999.⁹ Almost all of the GTA’s urban expansion has been into high quality agricultural land, as is illustrated by a comparison of the maps in Figures 9.5 and 9.6.¹⁰

In addition to the land that had become urbanized by 1999, an additional 629 km² had been approved for development, and another 363 km² had been designated urban in official plans. Together these represent a 57 per cent increase over the urbanized area in 1999.¹¹

Figure 9.2 Population Density in the GTA, 1996



Figure 9.3: Employment Density in the GTA, 1996



Figure 9.4 Population plus Employment Density in the GTA, 1996



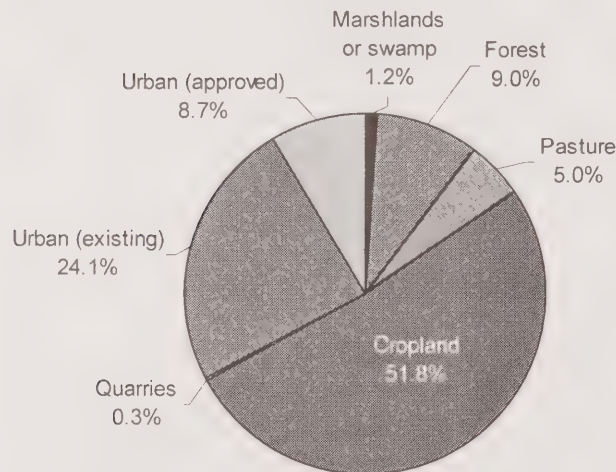


Figure 9.6 – Loss of agricultural lands in the GTA



Of the remaining 4,438 km² of the GTA that was not urbanized or designated for development in 1999, 1,958 km² was designated as agricultural lands in official plans and 2,060 km² was designated as greenlands. This leaves about 420 km² of land not so designated, much of which is nevertheless in agricultural use.¹² The actual distribution of land cover types in the GTA is shown in Figure 9.7.¹³

Figure 9.7:
Land Cover in the GTA



What is driving the trends?

The above analysis showed that, overall, gross population and employment densities have been falling in the GTA over the 1967-99 period. The pattern with respect to *gross residential* densities is variable – in some areas of the GTA they are rising, in other areas, falling, and in yet other areas, remaining relatively stable. And *net residential* densities are rising in some parts of the region.

These trends are not inconsistent with one another. First, the gross population density numbers provided in Figure 9.1 provide one number for the GTA as a whole, which can mask variations in density trends within the region. Gross residential densities in some parts of the GTA may well be rising, and falling in others, but the overall GTA-wide trend has been to falling gross population densities.

Second, rising net residential densities are not inconsistent with falling gross densities. Where net residential densities are increasing, but gross densities are either stable or falling, other factors are at work, such as:

- The area devoted to public lands is increasing as a share of all land. This has been found to be the case in many areas of new development in the GTA – lands devoted to roads, parks and greenlands account for an increasing share of urbanized lands. In some cases, this reflects better protection of environmentally sensitive areas and a greater provision of public parks than occurred in the earlier-urbanised areas. In other cases, the area devoted to roads is greater.
- As shown in Section 1, household size is falling. If the number of units per gross hectare remains stable and household size falls, gross population densities will also fall.
- Perhaps most importantly, the density of employment lands may be falling, bringing down densities measured over gross urbanized areas.

Little attention is focused on development patterns in employment lands, even though these areas typically account for almost as much use of land as residential areas. The limited data that is available suggests that employment densities are falling faster than residential densities.

As to the substantive causes, there are several factors commonly linked to sprawl. These include a range of factors, such as consumer preference, direct- and cross-subsidies that artificially lower the price of low density greenfields development and

artificially raise the price of denser development and redevelopment; weaknesses in planning policy, implementation and the planning system; inflexible and land-consumptive engineering standards; a lack of GTA-wide co-ordination on urban form, investment and transportation; and extremely limited investment in transit and other alternatives to the automobile¹⁴.

All of these issues will have to be addressed, both with respect to residential and commercial development, to achieve compact urban form in the GTA.

The foregoing analysis also illustrates the need for much better information and data that would allow us to know how urban growth is unfolding in the region. We need up-to-date and GTA-wide information on urban development patterns across the GTA, including (and in all cases for both residential *and non-residential use*):

- ongoing, real-time monitoring of the extent, location and nature of lands being urbanised, and planned for urbanisation, including
 - the percentages of new development occurring on greenfields versus already-urbanised lands
 - the amount and nature of development occurring in designated nodes and corridors
- the extent of mixed use development
- gross and net densities.

- ¹ See Blais PB, *The economics of urban form*. Paper prepared for the GTA Task Force, 1996.
- ² See, for example, Browning R et al. The impact of transportation on household energy consumption, *World Transport Policy and Practice*, 4(1), 1998, and also the discussion here in Section III.10.
- ³ Figure 9.1 is based on population data provided in Section 1, above, and on Tables 3 and 7 of Wright RM, *The evolving physical condition of the Greater Toronto Area: Space, form, and change*. Neptis Foundation Study, University of Toronto, February 2000. 'Gross population density' here means total population divided by the extent of the urbanized area.
- ⁴ The following Table shows the data and sources used in calculating the densities in Figure 9.1.

Year [see Note 1]	Urbanized area (km ²) [see Note 2]	Population (millions) [see Note 3]	Density (residents/ km ²) [see Note 4]	Density of added areas [see Note 5]
1967	482	2.62	5,435	
1992	1,389	4.32	3,110	1,874
1999	1,732	4.91	2,835	1,720

Note 1: These three years were used because they are years for which data on the extent of the urbanized area are available (see the source cited in Note 2 for more information on this point).

Note 2: Data on the extent of the urbanized part of what is now the GTA are provided in Table 7 (p. 35) of Wright RM, *The evolving physical condition of the Greater Toronto Area*. University of Toronto and the Neptis Foundation, February 2000.

Note 3: The estimate of the 1967 population of 2.62 million for what is now the GTA was derived by interpolating data from the 1966 and 1971 Censuses of Canada presented in *Key Facts* (Metro Toronto, 1995). The 1966 population was 2.54 million and the 1971 population was 2.92 million.

The estimate of the 1992 GTA population of 4.31 million was derived by interpolating data from the 1991 and 1996 Censuses of Canada presented in Table 3 of the *GTA Atlas* (GTSB, 2000). The 1991 population was 4.24 million and the 1996 population was 4.63 million.

The estimate of the 1999 GTA population of 4.91 million was derived from estimates by Clayton Research from Statistics Canada data of population added in the GTA in

1996-7, 1997-8, and 1998-9, as presented to the Town of Markham (March 2000) and the Region of Durham (May 2000).

Note 4: The population densities of the total urbanized area of the GTA for the indicated years were calculated by dividing the corresponding number in Column 3 by the corresponding number in Column 2.

Note 5: The densities of the newly urbanized areas refer to the areas urbanized between 1967 and 1992 in the case of 1992, and between 1992 and 1999 in the case of 1999. These densities were calculated by dividing the *difference* between the population for the corresponding year and that for the next earlier indicated year by the *difference* between the urbanized area for the corresponding year and that for the next earlier indicated year. The densities are maximums because they assign all new population growth to newly urbanised areas, and therefore assume no population growth in already urbanized areas. In reality, some growth likely occurred in the already urbanised areas, meaning that the densities of the newly urbanized areas would be lower than indicated in Figure 9.1.

- ⁵ This statement is based on looking at the same numbers another way – in terms of land per person (simply the inverse of density). For the GTA as a whole, between 1967 and 1992, land per person increased about 5.5 square metres per year. Between 1992 and 1999, land per person increased 4.5 square metres per year.
- ⁶ This figure based on several sources, as summarised in *Study of the Reurbanisation of Metropolitan Toronto*, prepared by Berridge Lewinberg Greenberg for the Municipality of Metropolitan Toronto, 1991, pp. 98-103.
- ⁷ See Blais PM, *Inching towards sustainability: The evolving urban structure of the GTA*. Neptis Foundation Study, University of Toronto, March 2000.
- ⁸ Re York Region see, for example, Blais, PM, *Inching towards sustainability*, p. 12, *ibid.* Data for Halton provided by the Region of Halton.
- ⁹ Figure 9.2 is taken from Figure 3.1 of Blais PM, *Inching towards sustainability*, *ibid.*
- ¹⁰ Figure 9.3 is taken from Figure 4.10 of Blais PM, *Inching towards sustainability*, *ibid.*
- ¹¹ These details are from Tables 3 and 7 of Wright RM, *The evolving physical condition of the Greater Toronto Area: Space, form, and change*. Neptis Foundation Study, University of Toronto, February 2000.
- ¹² These details are from the Tables 1, 3, and 7 of Wright RM, *The evolving physical condition of the Greater Toronto Area*, *ibid.*
- ¹³ Figure 9.4 is based on Table 1 of Wright RM, *The evolving physical condition of the Greater Toronto Area*, *ibid.*
- ¹⁴ *Ibid.*

10 Energy Use

What are the trends?

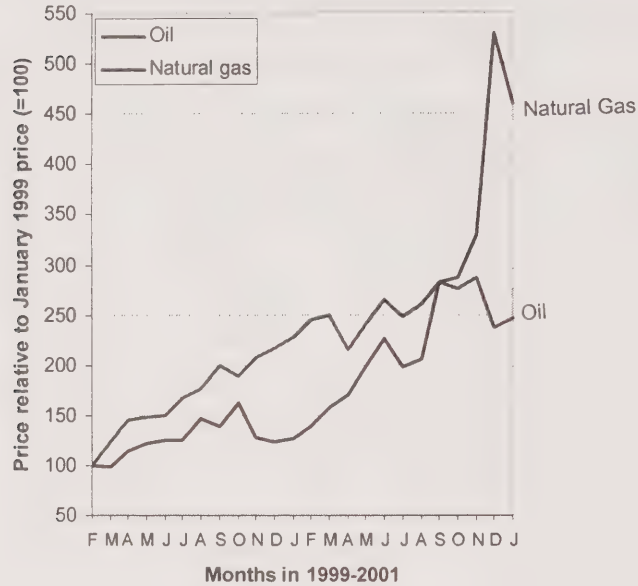
Few matters are more important for a modern society than energy use. The way of living of today's average Canadian relies on the use of about 30 times more energy – from oil, natural gas, coal, nuclear fuel etc. – than the way of living of a Canadian 150 years ago. It is the use of this energy above all that makes possible the differences between the two in comfort, convenience, productivity, and freedom from want.

For several decades, the availability of the relatively low-cost energy on which the well-being of what is now the GTA depends has been taken for granted. There are several signs that we may be seeing the beginning of the end of the era of readily available energy. Accordingly, it would be timely to attend more to how the GTA's dependence on energy consumption can be reduced.

Recent price increases may provide strong initial signals of emerging changes in energy availability. Changes in crude oil and in wholesale natural gas prices are portrayed in Figure 10.1. Several predictions are available as to where these prices are heading. Few point to reversion to the prices of early 1999. Some point to continuous price increases to several times current levels.

Should the recent large increases in fuel prices continue, places where there has been attention to reducing energy dependence will show a competitive advantage over places where there has been no such attention. Moreover, residents of the former places will be more comfortable. Even if prices stabilize at current levels, there will be advantage in reducing energy consumption, which would reduce pollution and reduce costly imports of fuel into the GTA.

Figure 10.1: Recent Changes in the Prices of Crude Oil and Wholesale Natural Gas



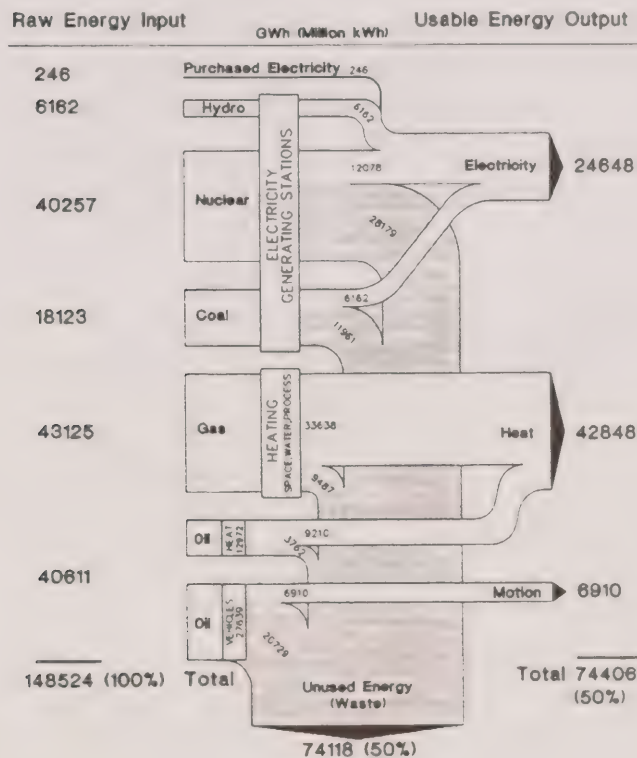
Systematic, effective attempts to reduce energy consumption require knowledge of levels of energy supply and energy use for different purposes and the ability to identify changes over time.

Municipalities in the GTA are beginning to see the need to make inventories of energy supply and use. Work is proceeding in the Cities of Toronto and Mississauga and in the Region of Peel, among others. None has yet developed a full inventory. Presented here are initial results from the work being done by the City of Toronto, using the only results that are readily available.

The former Metropolitan Toronto conducted an energy inventory in 1995 for the year 1988.¹ The results appear in Figure 10.2. A particular finding illustrated in Figure 10.2 is that about 50 per cent of the energy inputs were not used; i.e., they were wasted.

Unpublished work at the city of Toronto has confirmed the initial inventory, except that the use of oil for transportation in 1988 was found to have been underestimated by more than 35 per cent. The summary of the original inventory for 1988 shown in Figure 10.2 nevertheless remains a useful model for use throughout the GTA.

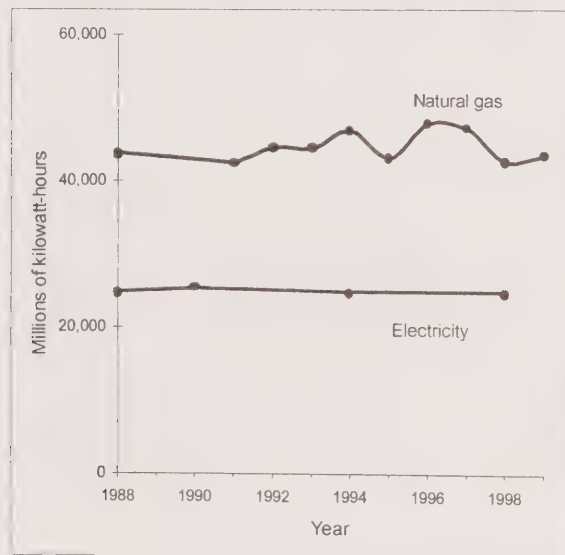
Figure 10.2: Estimated energy balance of activities within the area of the present City of Toronto, 1988



Such an inventory provides a good basis for analyzing and changing energy use within individual jurisdictions and across the GTA. However, it should be noted that GTA residents are responsible for the use of much more energy than is actually expended within the GTA's borders. The other energy includes, for example, that involved in the production of aluminum and in transporting fruit from California.

An inventory of the kind portrayed in Figure 10.2 shows energy supply and use in a particular year. Also of interest is how energy use changes over time. Securing such information presents several challenges. Trends in the use of two types of energy – within the jurisdiction represented in Figure 10.2 – are shown in Figure 10.3, for the period 1988-1999. They show that consumption of both types of energy has been essentially constant over this period (notwithstanding increases in population and economic activity).

Figure 10.3: Trends in the use of natural gas and electricity in what is now the City of Toronto



What is driving the trends?

A recent detailed analysis by Natural Resources Canada showed that across Canada energy use by the residential sector declined between 1990 and 1998 by 2.4 per cent.² Other sectors showed increases in energy use: commercial by 0.9 per cent, industrial by 9.9 per cent, transportation by 16.2 per cent, and agriculture by 13.1 per cent, contributing to an overall increase of 9.2 per cent.

The main reasons for the increase were increases in population (8.3 per cent) and in energy intensive activities per person (6.5 per cent), offset by improvements in the energy efficiency of these activities (6.1 per cent).

It is likely that energy use in the city of Toronto reflected these national trends, allowing for differences in population changes and in the balance of activity sectors (e.g., proportionately much less energy is used for industrial purposes in the city of Toronto). However, the analysis of energy use within the city is not yet sufficiently advanced to show the basis for the recent constancy in natural gas and electricity use (*Figure 10.3*) or to provide estimates of how the use of oil for transport and other purposes has changed.

ENERGY USE

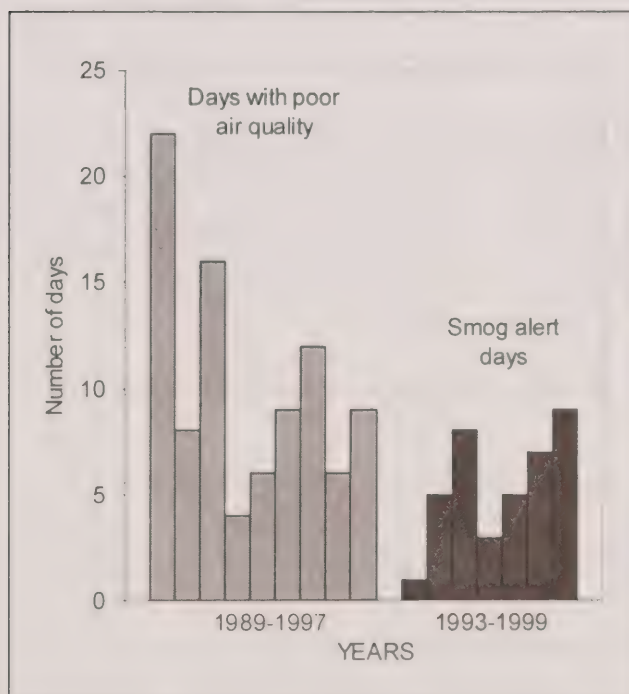
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- ¹ *The potential for district energy in Metropolitan Toronto*. Metro Works Department, March 1995.
- ² *Energy efficiency trends in Canada 1990 to 1998: A review of secondary energy use, energy efficiency and greenhouse gas emissions*. Natural Resources Canada, Office of Energy Efficiency, 2000.

11 Air Quality

What are the trends?

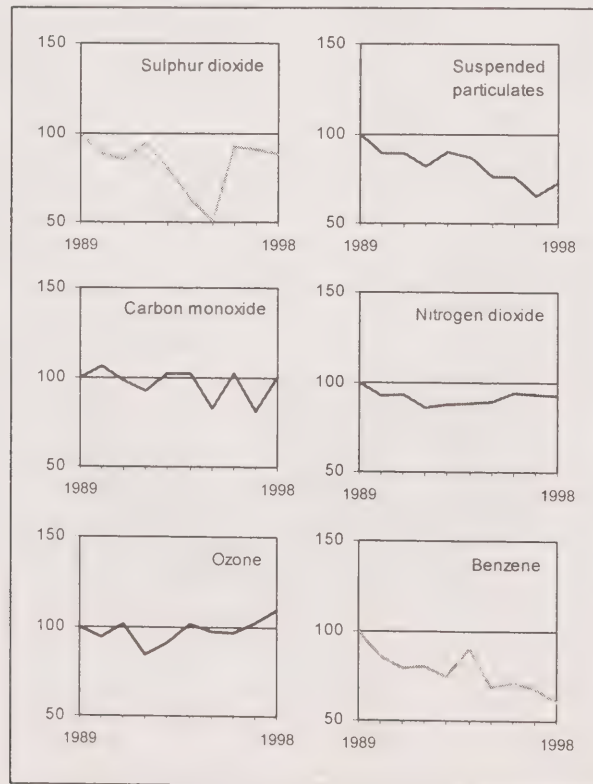
In some respects, the quality of the GTA's air is improving, notwithstanding the growth in population and economic activity, and the even larger growth in transport activity (*Figure 8.1*), the main source of most of the GTA's air pollution. The number of days considered to have poor air quality has a possible declining trend (*Figure 11.1*),¹ and average levels in the air of many of the major pollutants are falling (see the graphs for sulphur dioxide, suspended particles, and benzene in *Figure 11.2*).²

Figure 11.1: Days with poor air quality and smog alert days in the GTA



A significant exception to the declining trends is ground-level ozone (a form of oxygen), which damages all living things and many materials and is the main constituent of smog. The number of smog-alert days has a possible increasing trend (*Figure 11.1*), as does the average concentration of ozone in the air (*Figure 11.2*). The overall annual average ozone concentration recorded at the 11 GTA monitoring stations in 1998 was 22.2 parts per billion, almost the level at which increases in hospitalizations have been observed (25 ppb).³ The level at the Stouffville monitoring station was 31.4 ppb, meaning that in this part of the GTA ozone levels are often above a level believed to cause or aggravate disease. (Stouffville's annual average has been at or above 25 ppb in most years since 1989.)

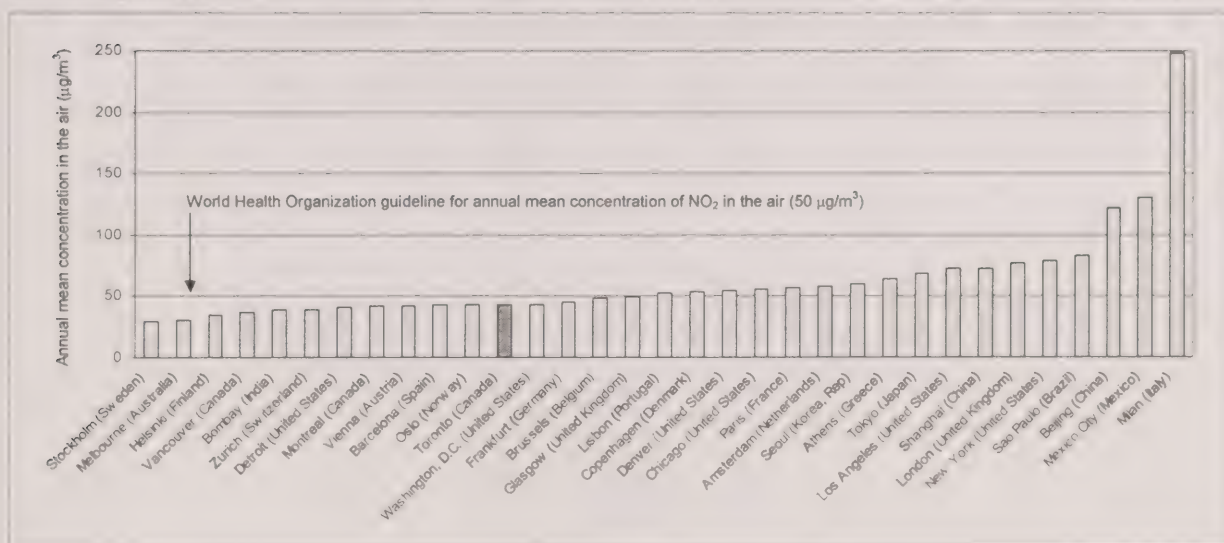
Figure 11.2: Trends in concentrations in the air of common pollutants (1989 = 100)



The amount of nitrogen oxides in the air is a significant contributor to ozone levels (see below). A major component of the gases known as nitrogen oxides is nitrogen dioxide, the concentration in the air of which is regularly assessed in urban regions throughout the world. Comparative data are provided in Figure 11.3 in relation to the corresponding World Health Organization guideline.⁴

What is driving the trends?

Figure 11.3: Concentrations of nitrogen dioxide in the air of comparable urban regions, 1993-95

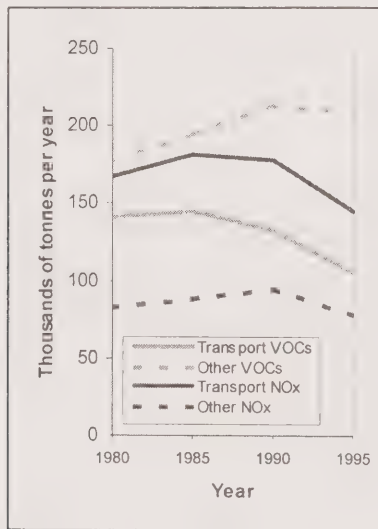


Ozone is produced by the action of sunlight on a mixture of volatile organic compounds (VOCs) and nitrogen oxides (NO_x). Ozone formation takes some time and can be inhibited by other components of vehicle exhaust. Thus, the highest ozone levels are often downwind of emissions sources, as in the case of Stouffville, most of whose ozone originates in the GTA.⁵

Transport activity is a major source of VOCs, chiefly from evaporated fuel, and the major source of NO_x , formed whenever combustion occurs in air. One estimate of trends in contributing sources in the GTA is shown in Figure 11.4.⁶ There is good reason to limit emissions of both NO_x and VOCs because both are pollutants in their own right.

Some VOCs are carcinogenic; NO_x contribute to respiratory disease, lake acidification, and damage to materials. As well, the relative weights of their contributions to ozone formation in the GTA – and that of weather – are not well understood.⁷

Figure 11.4: Emissions of volatile organic compounds (VOCs) and nitrogen oxides (NO_x) from transport and other GTA sources



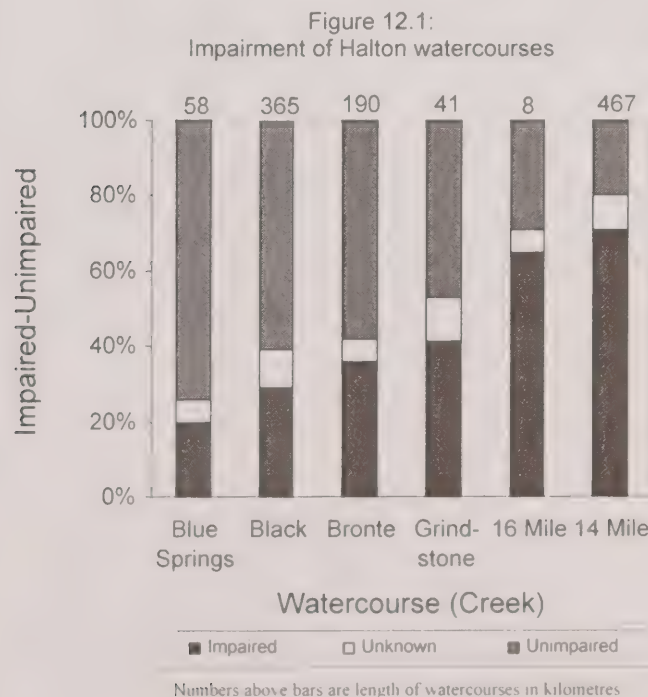
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- ¹ Figure 11.1 is based on data presented in Figures 9 and 10 of *State of the GTA in 2000, Phase 1* (Greater Toronto Services Board, 2000), ultimately provided by the Ontario Ministry of the Environment.
- ² Figure 11.2 (except the benzene data) based on data in the Appendix of *Air Quality in Ontario 1998*, Ontario Ministry of the Environment. Averages are of available data from all GTA monitoring stations. Benzene data were provided by Environment Canada (communication from Tom Dann to Richard Gilbert, December 5, 2000).
- ³ See McPhail J, *Ontario Medical Association Ground Level Ozone Position Paper*, 1998, available at <www.oma.org>, and also the City of Toronto's report *Toronto's Air: Let's Make It Health*, Toronto Public Health, December 2000. The latter report suggests that in the City of Toronto in 1995 about 1,000 premature deaths and 5,500 hospitalizations were attributable to air pollution. In the present report, the focus is on *trends*, which are best expressed in annual average concentrations. Hourly averages, which can be particularly high in the summer, may be of more significance to public health.
- ⁴ Figure 11.3 is based on data in *World Resources 1998-99*. World Resources Institute, Washington DC, Table 8.5, p. 264-5. Environment Canada's "maximum desirable [annual mean] concentration" for nitrogen dioxide is a little higher: 61.5 µg/m³ (32 parts per billion) vs. the WHO guideline of 50 µg/m³.
- ⁵ Although roughly half of southern Ontario's ground-level ozone is blown in from the United States, about 75% of the ozone in the northern and eastern parts of the GTA originates in the GTA.
- ⁶ Figure 11.3 is based analyses in a report by Energy and Environmental Analysis (Arlington, Va.) for the Canadian Automobile Association, *An updated look at VOC and NO_x emission trends in selected Canadian metropolitan areas*, Nov. 1999, p. 22.
- ⁷ *Summary for Policymakers: A synthesis of the key results of the NO_x/VOC Science program*. Environment Canada, 1997.

12 WATER QUALITY

What are the trends?

The quality of municipal drinking water in the GTA is well within provincial, federal, and international guidelines. Although the quality of piped water is high, particularly in relation to world standards, there is a set of potential issues concerning the *quantity* consumed, the relatively high inputs of chemicals and energy to purify and distribute the water, and resulting burdens on sewage systems.

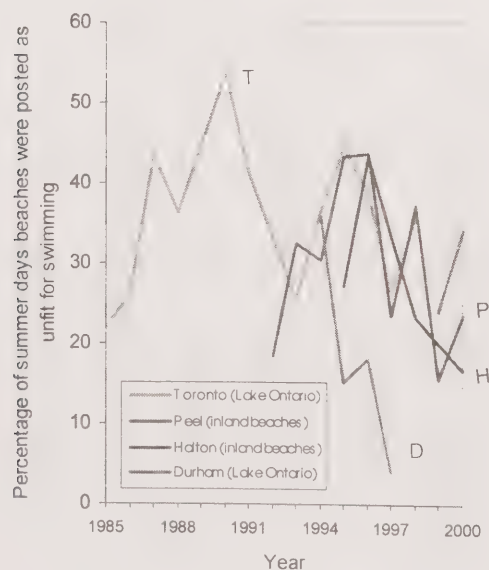
Canadians have among the highest domestic water consumption rates per capita in the world,¹ and it is likely that the GTA ranks high among comparable urban regions in water consumption per capita.



Most of this section is concerned with surface and ground water in the GTA, to which increasing attention is being paid. The full extent of the degradation is just beginning to be understood. Methodologies for assessing surface and ground water quality are currently being developed in the region and will hopefully be deployed across the region to increase of understanding of this important issue.

Some of the results of one kind of recent assessment – for watercourses in Halton region – are shown in Figure 12.1,² which suggests that about half of the lengths of the indicated Halton watercourses are impaired.³ The impairment is associated with agricultural activity and with residential and commercial development; i.e., unimpaired parts of watercourses usually flow through riparian wildlands (natural vegetation).

Figure 12.2. Beach postings as a percentage of summer days



This relationship can be seen in the map of Bronte Creek in Figure 12.3.

Figure 12.3 Water quality of Bronte Creek (Halton Region)



Image acquired on September 3, 1999

Another broad indicator of a certain kind of surface water quality is fitness for swimming, more specifically the number of days each year that beaches are posted as unfit for swimming on account of bacterial pollution. Trends in parts of the GTA for which data are available for several years are illustrated in Figure 12.2.⁴

Except for the indicated Durham beaches for 1999 and 2000 (1998 Durham data are not available), there appears to have been a generally declining trend in beach closings since 1995, for both Lake Ontario and inland beaches, suggesting possible recent improvement in surface water quality. However, the data are few, variable from year to year, and highly dependent on rainfall patterns and other factors. Thus the trend may be spurious.

Moreover, at the end of the period covered by Figure 12.3, the indicated beaches continue to be posted as unfit for swimming for an average of about one summer day in five; this is on account of pollution from human and animal activity that has been sometimes exacerbated by low water levels. For the most part, the data in Figure 12.3 relate to a public health matter rather than an environmental concern *per se*.

What is driving the trends?

The GTA's high water consumption may occur in part because the price of water is relatively low (*Figure 12.4*).⁵ The primary causes of impairment of watercourses are agricultural activity and land development. Figure 12.5 shows the extent of developed land by watershed as well as land designated for development.⁶ (*Figure 9.4*, in the section on Urban Form, places the amount of developed land and land approved for development in the context of the distribution of all land cover types in the GTA.)

Figure 12.4:
Average prices in comparable urban regions in 1996 of drinking water piped to households

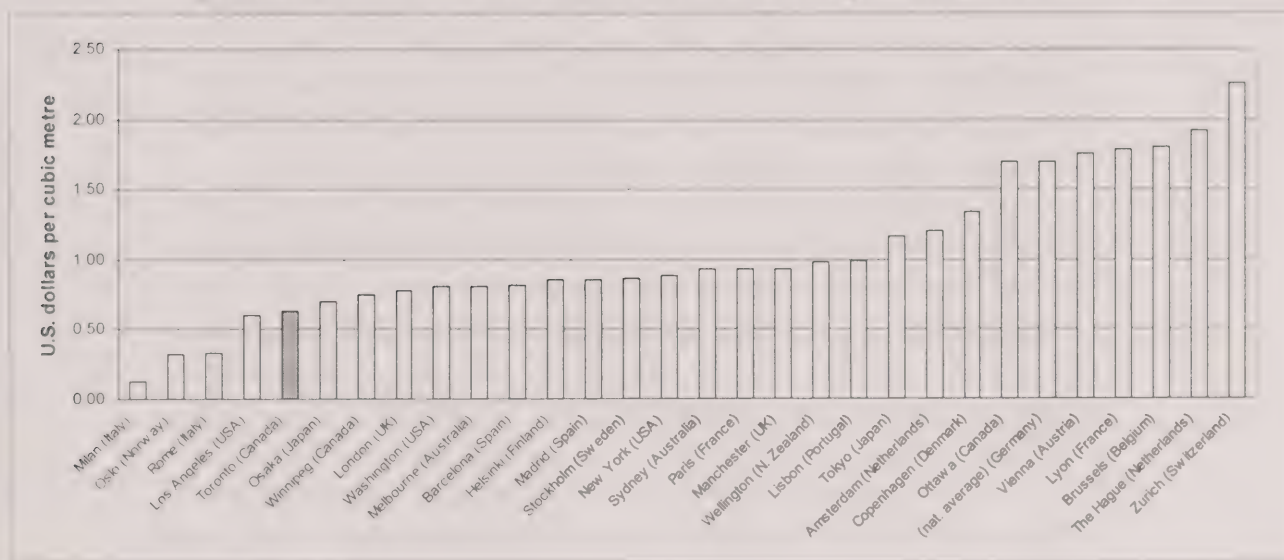
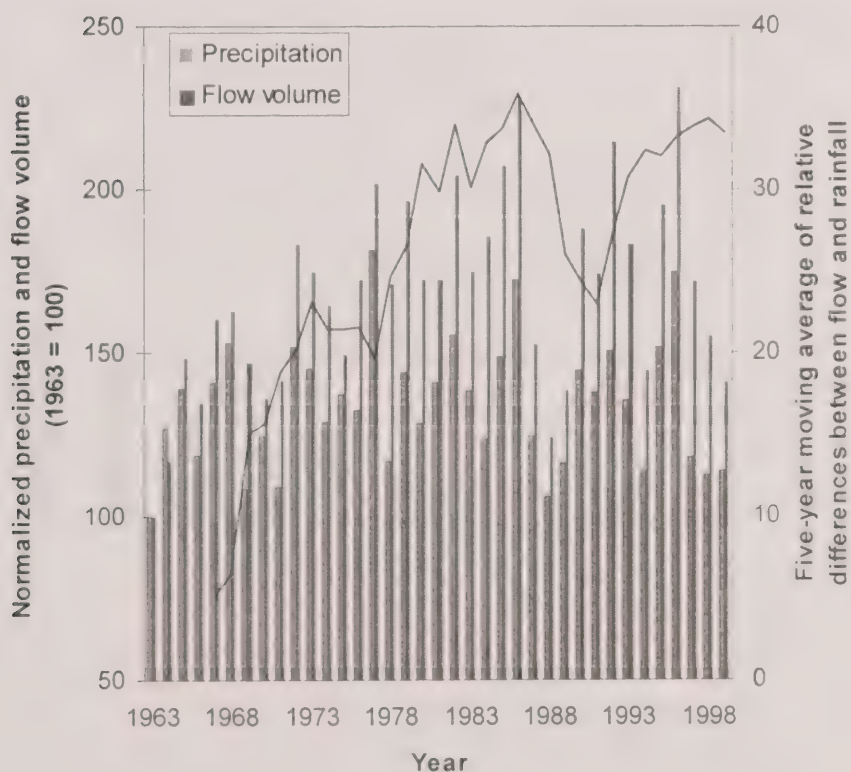


Figure 12.6: Don River flow volume and precipitation, 1963-1998

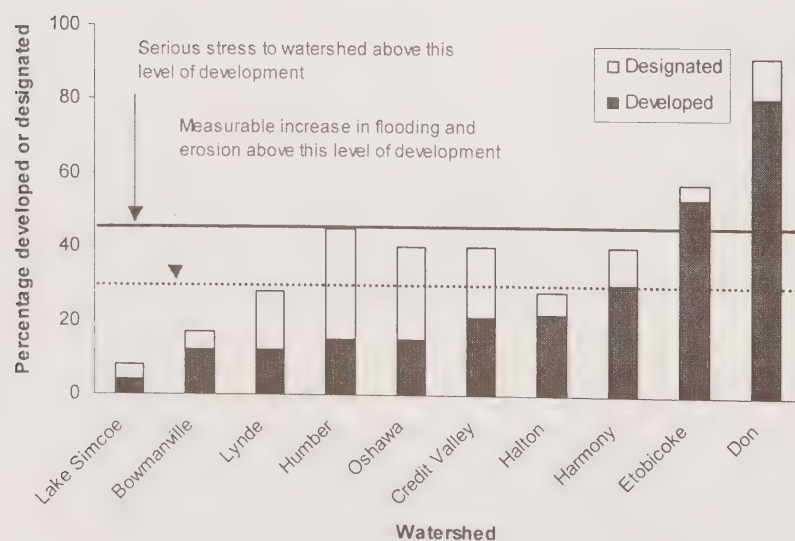


Two watersheds – Etobicoke and Don – have well over the extent of development associated with serious stress to a watershed's natural systems, including its watercourses. Many other watersheds are at or approaching the level at which measurable flooding or erosion occurs as a feature of "normal" water flow, or even the level at which there is serious stress to watershed systems.⁷

The Don River provides an example of the relation between development and enhanced water flow. The bars in Figure 12.6 show the Don River's total water flow at Todmorden in each year from 1963 to 1999, normalized to the 1963 flow, together with total rainfall in the area for each of these years, also normalized to the 1963 total.⁸

There is much variability from year to year but across this period rainfall has shown no overall increasing or decreasing trend whereas the river flow increased, especially in the earlier years. This is brought out in the line graph in Figure 12.6, which shows increasing flow in relation to precipitation in the 1960s and 1970s.

Figure 12.5:
GTA land developed and designated for
development, by watershed



Something of a plateau was reached in the 1980s and 1990s, perhaps as the pace of new development in this watershed slowed. (The decline in the mid 1980s reflects a period of relatively low rainfall, when a higher proportion of precipitation was diverted as evaporation.)

As well as causing more precipitation to be flushed into watercourses, land development involving large areas of impervious surface also allows the precipitation to reach watercourses more quickly. This removes opportunities for filtering and other treatment of water by natural features such as wetlands and vegetation. Flushed with the rainwater and melted snow are the accumulated contaminants associated with human activity, particularly oils and chemical residues associated with transportation and pesticide use.

Bacterial contamination of surface water arises from the flushing of animal wastes from impervious surfaces and also from overflows of sanitary sewers, particularly where they are fed by downpipes carrying roofwater. Programs in parts of the GTA to add separated storm sewer systems and disconnect downpipes may have contributed to the possible recent improvement in fitness of beaches for swimming indicated in Figure 12.3. An additional contributing factor may have been federal and provincial programs that heightened awareness and vigilance with respect to Lake Ontario and inland water bodies.⁹

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- ¹ *World Resources 2000-2001*, World Resources Institute, Washington D.C, 2001 (Table FW.1).
 - ² The assessment, conducted by Dr. Ronald Griffiths of the Region of Halton, is based on the frequency of occurrence of benthic macroinvertebrates, who provided the data represented in Figure 12.1 and the map in Figure 12.3. For the methodology, see Griffiths RW, Mapping the water quality of streams. In: *Proceedings of the Watershed Management Symposium*. Held at the Canadian Centre for Inland Waters, Burlington, Ontario. December 6-8, 1995. Canadian Water Resources Association, Cambridge, Ontario, 1996, pp. 286-291.
 - ³ 'Impairment' is defined in the source detailed in Note 2 in terms of the BioMAP water quality index, i.e., in terms of concentrations of benthic macroinvertebrates.
 - ⁴ Data on beach closings are from municipal health departments. Toronto beaches are Sunnyside, Boulevard Club, Centre, Wards, Hanlan, and Cherry. Peel beaches are Heart Lake, Caledon, and Professor's Lake. Halton beaches are New Beach, Old Beach, and Kelso. Durham beaches are Rotary Park, Newcastle Beach Central, Frenchman's Bay East and West, and Whitby Beach East
 - ⁵ *OECD Environmental Data Compendium 1999*, Organization for Economic Cooperation and Development, Paris, France, 2000 (Table 3.2)
 - ⁶ Figure 12.5 is based on data presented by Vicki Barron of the Credit Valley Conservation Authority to the GTSB's Countryside and Environment Committee, June 2000.
 - ⁷ The thresholds for flood and erosion and for serious stress are taken from the *GTA Atlas*, which includes the following: "many GTA watersheds are over the 30 per cent developed threshold, a level at which there is a measurable increase in frequency and severity of flooding and channel erosion. A watershed is considered 'seriously stressed' at anywhere between 40 and 50 per cent development." (p. 21).
 - ⁸ The rainfall and river flow data in Figure 12.6 were provided by the Toronto and Region Conservation Authority (Bernie McIntyre).
 - ⁹ Notably the Canada-U.S. *Great Lakes Water Quality Agreement* and the *Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem*

13 Waste Management

What are the trends?

First, it should be said that we know almost nothing about waste generated at most industrial, commercial, and institutional establishments in the GTA. Management of this waste is for the most part a private responsibility. There are almost no data on how much of this waste is generated and how it is managed.

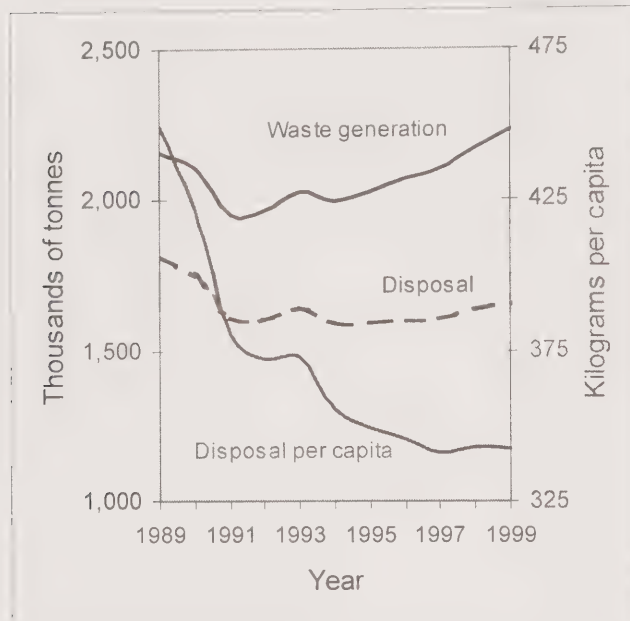
In 1990, most of this waste was handled at municipal disposal facilities. The amounts handled exceeded those for waste from all other GTA sources, including residential and municipal waste¹ (roughly 2.5 vs. 1.7 million tonnes/year). Beginning in 1991, most of the commercial and industrial waste went to sites in the U.S. for disposal. Now, perhaps no more than a quarter of the commercial and industrial waste – i.e., about 500,000 tonnes/year – is handled by GTA municipalities.

Information about waste managed by municipalities is more available, although frequent changes in responsibilities and lack of standardized data collection make for difficult determination of trends in the production and management of this waste. *Estimates* of the generation and disposal of municipally managed wastes are shown in Figure 13.1.²

They are based on reports by municipal works departments, but many assumptions have been made in combining the data. It should be noted that much waste collected from most apartment buildings is not represented in Figure 13.1, because collection and disposal of this waste is a private rather than a municipal responsibility.

Figure 13.1 shows that estimated overall generation of municipally managed wastes fell sharply around 1990, and has risen at the rate of about 1 per cent/year since 1991. This is well below the rate of increase in the GTA's population (about 1.7 per cent/year).

Figure 13.1: Waste generation and disposal in the GTA (left scale), and disposal per capita (right scale)



Note: Only regular wastes managed by municipalities are represented here. Not represented some residential, most commercial-industrial-institutional, and all hazardous wastes.

The chart shows that *disposal* rates remained flat during the 1990s. The increase in the diversion rate for this class of waste has just about offset the growth in waste generation. (The overall diversion rate for the GTA is now about 26 per cent.) The important result is that the estimated disposal per capita has fallen sharply, from 450 to 340 kilograms per capita between 1989 and 1999, with an indication that it has leveled off during the last few years.

The GTA's rate of household waste disposal per capita appears to be somewhat higher than the average for Canada, but close to the average of countries with a comparable standard of living.³

What is driving the trends?

Aggressive programs to encourage recycling and composting have been implemented throughout the GTA and have no doubt been effective in preventing increases in the amounts sent for disposal. A more important factor may be economic activity, with which waste production is strongly correlated. Thus, the early-1990s declines shown in Figure 13.1 may have been as much the result of economic recession as municipal action towards waste diversion; the increases in the late 1990s may equally indicate the off-setting of the effects of diversion programs by waste production resulting from growth in economic activity.

Ambitious targets for the diversion of municipal waste from disposal are being set across the GTA. These are prompted as much by anticipated difficulties concerning waste disposal as by regard for the benefits of diversion. Little attention is being paid to waste *reduction*, although this may potentially be a more important factor.

Almost unaddressed is the matter of the commercial-industrial waste that is not considered to be a municipal responsibility. The economy and the environment of the GTA depend at least as much on effective management of commercial-industrial waste as municipal waste.

Accordingly, commercial-industrial waste may warrant more attention than it is presently accorded by municipalities, which could in a time of crisis be seen as having the greatest part of the governmental responsibility for such waste. This kind of attention would be severely constrained by an almost complete lack of relevant data, which deserves remedy.

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- ¹ There are major issues in the definition of waste (see also Note 3). Here, 'residential waste' refers to waste generated in homes and other residences. 'Municipal waste' means waste generated by municipalities and their agencies (including park litter, road sweepings, etc.). 'Commercial waste', 'industrial waste', and 'institutional waste' are those generated by these respective activities. Hazardous wastes are defined separately. A major source of confusion is that wastes *managed* by municipalities are often referred to as 'municipal wastes'. These include much residential and some commercial, industrial, and institutional waste; some of it is handled by municipalities on a commercial basis (i.e., a fee is charged in relation to private-sector handling fees; some is not. Such wastes are known here as 'municipally managed wastes'.
- ² Figure 13.1 is based on municipal reports notably as consolidated in the 1995 report by Richard Gilbert and Ray Bremner *Overview of waste Management in the GTA*. Use was also made of a table provided by Virginia MacLaren of the University of Toronto, prepared for the *Vital Signs Toronto (2000) Draft Indicator Report*. The data in Figure 13.1 do not include commercial-industrial-institutional wastes disposed of by municipalities for a direct fee.
- ³ See *OECD Environmental Data Compendium 1999*, Organization for Economic Cooperation and Development, Paris, France, 1999, Table 7.2a. Such international comparisons should be treated with great caution because of the numerous ways in which waste is classified and represented.

14 Global Environmental Impacts

What are the trends?

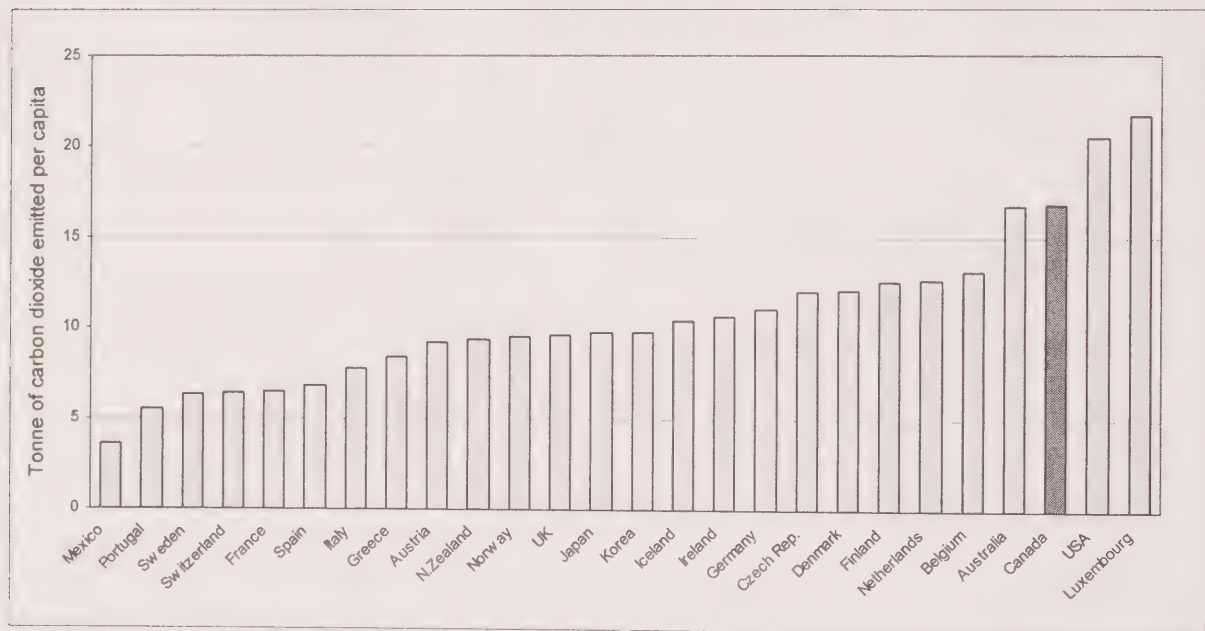
The main global environmental impacts of activities in the GTA come from emissions of greenhouse gases during combustion of fossil fuels and from release of substances that deplete the stratospheric ozone layer (such as chlorofluorocarbons, or CFCs). There are no good recent estimates of the extent of either kind of emission. However, emissions of ozone-depleting substances are likely to have fallen throughout the GTA during the 1990s on account of a general phasing out of the most potent of them in general use (CFCs) and their replacement in air conditioning units by less potent ozone depleters such as hydrochlorofluorocarbons (HCFCs).

The city of Toronto has set the target that by 2005 emissions of carbon dioxide – the principal greenhouse gas – from all sources within the city should be reduced by 20 per cent from 1990 levels. A detailed assessment has been made of the 1988 CO₂ emissions. They were estimated to total 28.3 million tonnes, i.e., approximately 13.5 tonnes per person.

As in the case of energy use, this estimate does not include emissions produced outside the city of Toronto on behalf of Toronto residents, e.g., those from the manufacture and transport of goods used by Toronto residents. Such emissions could add more than 25 per cent to the total, i.e., they would bring the total per-capita CO₂ emissions by and on behalf of city of Toronto residents and businesses to above 17 tonnes per capita.

For comparison, *national* per-capita emissions of carbon dioxide in several comparable countries (members of the OECD) are shown for 1998 in Figure 14.1.¹ Such national data are for the most part more comprehensive than any city total. Figure 14.1 shows that Canada, at 16.8 tonnes per capita, had among the highest levels of CO₂ emissions. The city of Toronto's per-capita CO₂ levels are similar to those for Canada as a whole.

Figure 14.1. Per capita emissions of carbon dioxide from human activities in OECD countries, 1998



It follows that the city of Toronto's per capita emissions of carbon dioxide are probably among the highest in the world for urban areas.

Carbon dioxide emissions per capita in the remainder of the GTA could be higher or lower than those in the city of Toronto, according to whether higher levels of use of fossil fuel for transportation outside the city are offset by higher levels of use of fossil fuel for commercial activity inside the city.

Any differences cannot be verified until comprehensive inventories are completed of energy supply and use throughout the GTA.

What is driving the trends?

Any recent changes in the GTA's global environmental impacts are likely to have been mostly the result of population increases and consequent increases in activities involving the use of fossil fuels. Additional changes in transport activity, as described in Section 8, are likely also to have made a contribution.

¹ Figure 14.1 is based on Tables 2.3C and 15.1A in *OECD Environmental Data: Compendium 1999*, Organization for Economic Cooperation and Development, Paris.

IV. Conclusions

The good news

In sum, the region has been performing well on a number of fronts. High levels of population growth demonstrate that this is a desirable place to live. Performance on a range of economic indicators positions us well for the future, following a dramatic and difficult restructuring in the late 1980s and early 1990s.

Many social indicators show improvements, such as those reflecting health, education and safety. And there is positive news on some environmental indicators – reduced waste per capita, and lower levels of certain air pollutants, for example.

On the other hand, other areas show little improvement on past trends – these are the “ongoing problems.” And some potentially serious issues are arising – the “emerging issues.” The analysis has also exposed trends that are not issues at the moment, but from a strategic point of view are essential to monitor and prepare for – the “potential vulnerabilities.”

Ongoing problems

Low density, primarily greenfields development is an ongoing problem, particularly given the rapid population and employment growth being experienced in the GTA. In the face of an additional two million inhabitants in the next two decades, action must be taken immediately to achieve more efficient, compact urban form.

Attention should be directed to include a much stronger focus on employment lands, which are significant contributors to sprawl but at present are barely addressed in policy and planning.

Current development patterns are of course closely linked to transportation. The above analysis, along with other analyses, clearly point to an impending transportation crisis in the GTA if urban development continues in its current form, and remains unaccompanied by adequate investment in transportation infrastructure and by actions to restrain the growth in road traffic.

CONCLUSIONS

It is especially important from a sustainability perspective that significant investments be made in support of alternatives to the automobile, particularly in transit improvements. In addition, the areas of freight transportation and non-commuting auto trips should be addressed with much greater urgency. These currently ignored areas are where rapid growth is taking place, along with the associated negative impacts.

Urban form and transportation issues are, in turn, closely linked with another ongoing issue identified above – smog. While other elements of air quality have shown improvement in recent years, no such amelioration is evident with respect to smog. Seriously addressing urban form and transportation must be part of a strategy for smog reduction.

Other ongoing issues include rental housing affordability and availability. Aside from the obvious quality of life implications, not addressing this issue may have serious implications for the long term stability of the Toronto economy, if adequate housing cannot be provided for low-income workers.

Finally, there is need to find more enduring solutions to the garbage issue, with some focus on reducing the initial generation of waste and on securing better information about commercial and industrial waste.

Emerging issues

One special area of concern identified in the above analysis is increasing level of economic, social and geographic polarization within the region.

While not yet at extreme levels, particularly compared to other global cities, the evidence presented above regarding increasing income polarization, diverging incomes between inner and outer areas of the region, and increasing neighbourhood homogeneity should be treated as an early warning sign. These are not positive trends.

CONCLUSIONS

It is important to recognize that as the region continues to grow and mature over the coming years, these trends will not be confined to inner areas, but will ripple outwards as what are now newer neighbourhoods age and become more “inner” in nature, within the context of an expanding urban region.

Increasing social tension, creation of areas of deprivation and disinvestment, and increased crime are all potentially associated with a continuation of these trends. Aside from the obvious social impacts, they could have serious implications for the sustained vibrancy of the Toronto economy as a place to invest, live and do business.

A second emerging issue is increasing social dependency. This is an inevitable result of an aging population. We can expect the impacts to kick in when or just before the leading edge of the baby boom hits 65 years of age, in just over a decade from now. There are important implications for service provision, municipal finance, housing and transportation that must soon be addressed.

Potential vulnerabilities

Finally, the above analysis has pointed to some potential vulnerabilities. We need to develop strategies for dealing with these issues, which could have transformative implications for the GTA. They include our vulnerability to significant energy price increases, given our high levels of energy use for transportation and for heating and cooling buildings and our near-total dependence on energy imported into the GTA.

A second area of vulnerability is any substantial change to federal immigration policy – increases or decreases – given that population growth in the region is almost completely dependent upon international immigration.

CONCLUSIONS

In any event, it is clear that the continued future prosperity of the GTA will depend on several key determinants:

- its ability to produce, attract, and retain well-educated and talented labour;
- the quality of its natural and built environment;
- its continued success at balancing social diversity and harmony while minimizing socio-economic polarization;
- the vibrancy of its cultural life and institutions; and
- the quality and supply of infrastructure supporting transportation and communications.

Future Analysis

It is also important to keep in mind that the latter half of the 1990s saw some radical and remarkable changes in Ontario and the GTA. Substantial changes were made to the education system, the health system and the social welfare system. A radical realignment of responsibilities between provincial and municipal governments took place. Municipal amalgamations were implemented in Toronto and several other Ontario cities and towns.

These changes took place at the same time as the economy pulled out of recession and restructuring, and the region was experiencing very strong economic growth.

Much of the information that has been presented above – though the most recent available – is not recent enough to capture the effects of these changes taking place in the latter half of the 1990s. In addition, many important data are not available at the GTA level. We expect that these changes will have produced some dramatic results affecting the social, economic and environmental conditions in the GTA.

CONCLUSIONS

In a global, digital economy, information, investment and labour move very quickly. Competition between city-regions for these assets is intense, and likely only to become more so as digital technologies spread throughout all parts of the economy and society. In this context it is critical to the health of regions that they are able to identify potential issues early, to analyze them accurately, and to respond effectively.

We need much better and more up-to-date information at the GTA level in order to do this successfully.

This review has assessed where the GTA stands on a limited number of key indicators. The scope and effectiveness of this exercise is only as good as the data and analysis upon which it is based. There are gaps in data availability at the regional level on a number of important fronts.

For the *State of the GTA in 2003* report, we strongly recommend that mechanisms be put in place to allow the continued collection of key data pertaining to:

- social well-being and levels of social assistance
- private and public sector investments in fixed capital and infrastructure
- availability and use of venture capital
- all aspects of freight transport throughout the GTA
- locations of expansion and proposed expansion of the urbanized area
- non-residential densities (commercial, industrial, institutional)
- percentage of new housing and employment on already-urbanized land vs. greenfields sites
- health, including mental health
- water quality (surface and ground water)
- water consumption per person per day (domestically, and for other purposes)
- commercial and industrial waste generation
- measures of biodiversity

CONCLUSIONS

- energy use, and global environmental impacts of GTA activities.

Forceful action to secure better data collection and analysis, by the GTSB and other agencies, is a matter of urgency.

Appendix 1

State of the GTA Staff Team

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Tim Dobbie, City of Burlington
Doug Lindeblom, Greater Toronto Marketing Alliance
Tony Parker, Region of Peel
Pauline Reid, Region of Durham
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APPENDIX 1

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Appendix 2

TABLE 1: COMPONENTS OF RECENT POPULATION GROWTH IN THE GTA, 1981-1996

	1981-86	1986-91	1991-96
Total growth (in 000s)	322,400	497,600	389,000
Net Migration*			
Interprovincial	69,200	29,400	-13,400
Intraprovincial	3,700	-66,300	-84,500
Net Domestic migrants*	72,900	-36,900	-97,900
International migrants	88,800	294,000	365,400
International migration as % of total population growth in the GTA	28%	59%	94%

* Net migration = in-migrants less out-migrants

	1981	1986	1991	1996
Total immigrants (in 000s)	1,193	1,304	1,549	1,870
Immigrants as % of total population	36.5	34.8	36.3	39.8

TABLE 2: THE CHANGING AGE STRUCTURE AND LEVELS OF SOCIAL DEPENDENCY IN THE GTA, 1966-1996

	1966	1976	1986	1996
Total population: (in 000s)	2,485	3,170	3,734	4,629
1) % of GTA Population 0-14 years old:				
	30	23	19	21
2) % of GTA Population > 65 years old:				
	7	8	10	12
Dependency ratio, in %: total of 1) + 2)				
	37	31	29	33
Weighted Dependency ratio, in % : 3 x 2) + 1 x 1) *				
	51	47	49	57

* Weighted by estimated average service costs (e.g. education and health): with population >65 weighted at three times the cost of those 14 years and under.

TABLE 3: CHANGING HOUSEHOLD AND FAMILY COMPOSITION, AND LIVING ARRANGEMENTS, IN THE GTA, 1966-96

1966	1976	1986	1996	% change 66-96
Average household size: number of persons				
3.7	3.0	2.8	2.7	-27
Family Households as a % of All Households:				
91	79	76	76	-17
Husband-Wife Families as a % of All Families:				
92	90	87	84	- 9
Lone Parents as a % of All Families:				
8	10	13	16	+94
% Unattached individuals:				
11	18	21	22	+96
Number of households (000s)				
646	1,010	1,320	1,643	+154

Note: Percentages may not add to 100 due to rounding

TABLE 4: Educational Attainment in the GTA, 1986-1996¹

	<u>1986</u>	<u>1991</u>	<u>1996</u>
Less than Grade 9	14%	11%	10%
High school	13%	15%	14%
Certificate or Diploma	17%	18%	20%
University degree	13%	16%	18%

TABLE 5: Employment in 'Knowledge Occupations' in the GTA², 1987-1999³

	Management, Business and Finance ⁴ (000)	Science and Health ⁵ (000)	Social Science, Education and Culture ⁶ (000)	Other ⁷ (000)	Total (000)	Management, Business and Finance	Science and Health	Social Science, Education and Culture	Other
1987	467.4	173.7	111.6	1,335.5	2,088.2	22%	8%	5%	64%
1988	505.8	161.3	114.4	1,331.2	2,112.7	24%	8%	5%	63%
1989	493.5	172.0	133.6	1,372.4	2,171.5	23%	8%	6%	63%
1990	511.9	182.6	133.7	1,345.2	2,173.4	24%	8%	6%	62%
1991	509.5	188.4	131.3	1,238.1	2,067.3	25%	9%	6%	60%
1992	487.7	170.7	142.4	1,231.7	2,032.5	24%	8%	7%	61%
1993	496.9	167.5	134.4	1,247.0	2,045.8	24%	8%	7%	61%
1994	474.7	167.6	157.6	1,230.3	2,030.2	23%	8%	8%	61%
1995	524.0	179.8	135.9	1,294.2	2,133.9	25%	8%	6%	61%
1996	512.5	178.8	142.0	1,332.5	2,165.8	24%	8%	7%	62%
1997	521.6	206.1	147.8	1,406.7	2,282.2	23%	9%	6%	62%
1998	532.2	227.2	151.2	1,449.9	2,360.5	23%	10%	6%	61%
1999	515.0	201.6	163.0	1,483.0	2,362.6	22%	9%	7%	63%

¹ Source: Statistics Canada² Toronto and Oshawa CMAs³ Source: Labour Force Historical Review, Statistics Canada⁴ Including management occupations (senior and other), professional occupations in business, and financial, secretarial and administrative occupations⁵ Including natural and applied science, professionals in health, nurse supervisors, and registered nurses⁶ Including occupations in social science, government services and religion, teachers, professors, and art, culture, recreation and sport occupations.⁷ Including clerical occupations and supervisors in business, finance and administration; technical, assisting and related occupations in health, sales and services occupations, trade, transport and equipment operators and related occupations and occupations unique to processing manufacturing utilities

TABLE 6: Employment by Industry in the GTA⁸, 1987-1999⁹

	<u>1989</u>	<u>1998</u>	<u>1999</u>
<u>Goods-Producing Sector</u>	648.2	615.8	641.8
Agriculture	15	6.7	8.5
Forestry, Fishing, Mining, Oil and Gas	6.3	5.3	3.1
Utilities	31	18.9	21.8
Construction	138.1	118.3	129.3
Manufacturing	457.6	465.7	479.1
<u>Services-Producing Sector</u>	1,623.1	1,837.3	1,896.8
Trade	344.1	357.9	378.7
Transportation and Warehousing	106.9	121.8	119.9
Finance, Insurance, Real Estate and Leasing	218.1	221.3	230.4
Professional, Scientific and Technical Services	148.3	215.7	239.9
Management of Companies and Administrative and Other Support Services	75.4	111.3	122.7
Educational Services	136.1	139.2	148.8
Health Care and Social Assistance	173.7	208.7	202.3
Information, Culture and Recreation	116.9	126.6	129.8
Accommodation and Food Services	115.1	128.9	130.1
Other Services	90.5	113	103.7
Public Administration	98.2	92.9	90.5
Total	2,271.3	2,453.1	2,538.6

TABLE 7: Value of Building Permits (\$000), GTA, 1991-1998¹⁰

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>
Industrial	522,118	343,223	277,316	425,062	409,713	488,558	678,633	829,127
Commercial	1,191,741	722,248	785,005	772,534	1,051,708	1,040,998	1,364,095	1,918,388
Institutional	601,366	636,145	440,315	372,264	605,286	333,726	880,600	769,257
Residential	3,657,783	3,087,451	2,616,058	3,467,954	2,755,777	3,240,309	4,688,610	4,678,685

TABLE 8: Growth in Internet Domain Names¹¹

	<u>July 1998</u>	<u>January 1999</u>	<u>July 1999</u>	<u>January 2000</u>	<u>July 2000</u>	<u>% growth</u>
GTA ¹²	35,434	61,744	100,881	122,015	221,827	526%
Ontario	55,720	100,881	151,921	189,236	333,194	498%
Canada	139,517	238,672	361,634	459,039	769,274	451%

⁸ Toronto and Oshawa CMAs⁹ Source: Labour Force Historical Review, Statistics Canada¹⁰ Source: CMHC¹¹ Source: Ministry of Economic Development and Trade analysis of data from Matthew Zook¹² Toronto and Oshawa CMAs

**TABLE 9: Internet Domain Names per Capita –
Top 10 U.S. Cities, Toronto and Other Ontario Cities¹³**

	<u>January 2000</u>	<u>July 2000</u>	<u>Percentage Growth</u>
San Francisco	75.44	114.73	52
Los Angeles	46.52	69.60	50
Washington	40.83	65.27	60
Miami	46.38	65.24	41
Seattle	40.60	65.23	61
New York	39.17	61.49	57
Boston	37.41	58.67	57
Dallas	30.17	46.70	55
Toronto¹⁴	25.56	46.48	82
Chicago	24.99	38.75	55
Philadelphia	29.18	38.23	31

TABLE 10: Number of Head Offices by Ownership in the GTA, 1989-1999¹⁵

	<u>1989</u>	<u>1999</u>
Canadian	89	91
United States	62	55
United Kingdom	16	7
Rest of Europe	12	11
Japan/SEA	15	12
Rest of the World	3	3
TOTAL	197	179

TABLE 11: Registered Patents in the GTA, 1990-1999¹⁶

	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999¹⁷</u>
Registered Patents	321	315	320	338	279	195	212	166	250	291

¹³ Source: Ministry of Economic Development and Trade analysis of data from Matthew Zook

¹⁴ Toronto CMA

¹⁵ Source: Financial Post 500, 1989, 1999

¹⁶ Source: Patent Office, Ottawa

¹⁷ Covers January to July 1999

TABLE 12: Government R&D Funding to Universities in the GTA (\$000), 1987-99¹⁸

	Ryerson	Toronto	York	GTA
1987-8	1,987	71,785	10,614	84,386
1988-9	3,785	77,084	15,769	96,638
1989-90	4,128	86,324	18,050	108,502
1990-1	4,895	104,934	18,845	128,674
1991-2	4,584	103,646	16,973	125,203
1992-3	1,575	110,123	20,652	132,350
1993-4	1,664	148,917	15,456	166,037
1994-5	2,191	168,184	15,951	186,326
1995-6	2,261	151,399	15,913	169,573
1996-7	2,539	154,283	14,249	171,071
1997-8	1,984	141,196	14,493	157,673
1998-9	2,327	155,697	16,961	174,985

TABLE 13: Business Sponsored R&D Funding to Universities in the GTA (\$000), 1987-99¹⁹

	Ryerson	Toronto	York	GTA
1987-8	397	7,972	394	8,763
1988-9	295	9,840	833	10,968
1989-90	322	9,567	852	10,741
1990-1	1,554	14,491	368	16,413
1991-2	1,196	13,193	874	15,263
1992-3	594	16,763	1,146	18,503
1993-4	801	49,633	876	51,310
1994-5	1,490	46,683	849	49,022
1995-6	1,517	49,479	720	51,716
1996-7	325	49,648	1,532	51,505
1997-8	143	55,933	1,065	57,141
1998-9	0	54,823	703	55,526

¹⁸ Source: CAUBO Financial Reports¹⁹ Source: CAUBO Financial Reports

TABLE 14: Firm Demographics, GTA, 1984-1995²⁰

	Newly identified	No longer identified	Total	Birth rate ²¹	Death rate ²²
1984	21,914	17,811	113,129	19%	16%
1985	22,495	18,193	117,813	19%	15%
1986	23,382	18,462	123,002	19%	15%
1987	24,946	20,387	129,486	19%	16%
1988	25,510	21,399	134,609	19%	16%
1989	29,063	25,049	142,273	20%	18%
1990	33,192	32,017	150,416	22%	21%
1991	25,635	26,348	144,034	18%	18%
1992	23,871	24,770	141,557	17%	17%
1993	23,410	23,727	140,197	17%	17%
1994	24,485	24,167	140,955	17%	17%
1995	24,189	23,907	140,977	17%	17%

²⁰ Source: Ontario MEDT analysis of Statistics Canada LEAP data

²¹ There may be cases where firm mergers have not yet been identified by Statistics Canada

²² See previous note

TABLE 15: CHANGES IN INEQUALITIES IN HOUSEHOLD INCOME DISTRIBUTIONS, TORONTO AND OSHAWA CMAs, 1981-96

	1981	1986	1991	1996	% change 1981-96

Index of Inequality in Income*: Range 0 = perfect equality; 1 = perfect inequality					
Toronto and Oshawa CMA	0.154	0.161	0.165	0.189	+20.5
All Canadian CMAs	0.152	0.157	0.164	0.179	+17.8

*Measured by the Gini Coefficient (an income concentration ratio)

Note: Calculations for Toronto CMA + Oshawa CMA, weighted according to their respective populations.

**TABLE 16: SPATIAL POLARIZATION: INDEX OF CHANGES IN
NEIGHBOURHOOD INCOME MIX AND SOCIAL HOMOGENEITY, GTA,
1981-96**

	1981	1986	1991	1996	Absolute % Change 1981-96
% of Households living in low-income neighbourhoods (1)	16.6	18.9	21.5	26.0	+9.4
% of Households living in middle- income neighbourhoods (2)	65.9	61.8	55.3	45.2	-20.7
% of Households living in high-income neighbourhoods (3)	15.1	17.8	21.9	28.7	+13.6

Median Household Income, 1996 = \$49,293

Definitions:

- 1) median household incomes <75% of GTA median income.
- 2) median household incomes from 75% to 125% of GTA median income.
- 3) median household incomes >125% of GTA median income.

Note: Neighbourhoods are approximated by census tracts.

TABLE 17: THE CHANGING ECOLOGY OF INCOME INEQUALITY, BY RESIDENTIAL ZONE: GTA, 1971-96

Zone	GTA-wide Median Household Income = 100				% Change 1971-96
	1971	1981	1991	1996	
1. Inner Area	80.7	78.7	77.6	76.7	-4.0
2. Older Suburbs	103.0	98.8	93.3	87.4	-15.6
3. New Suburbs	113.1	116.3	119.4	122.4	+9.3
4. Outer Suburbs	101.2	103.2	111.5	119.6	+18.4

Note: Zones are defined by the average age of housing in each census tract.

Zone 1: the area with significant proportions of pre-1946 housing stock

Zone 2: area housing predominantly built 1946 to 1971

Zone 3: predominantly post-1971 areas; that part of the urbanized communities in the urbanized core surrounding the former Metro municipality

Zone 4: area outside the urbanized core.

TABLE 18: TRENDS IN HOUSING PRICES AND RENTS, Nominal and Deflated, GTA, 1981-99

	1981	1986	1991	1996	1999
Single-family housing: average prices (\$)					
Unadjusted (nominal \$)	90,203	138,188	234,313	198,150	228,273
Adjusted \$ (1992=100)*	157,422	180,188	236,441	186,934	205,371

*Adjusted (deflated) by Toronto Consumer Price Index (CPI) for all consumer items with 1992 = 100.

Average rent/room (\$):					
Unadjusted (nominal \$)	86.4	126.0	166.3	219.3	--
Adjusted \$** (1992=100)	149.3	161.8	170.5	202.6	--

**Adjusted by Toronto consumer price rent index, with 1992 = 100

Notes:

- 1) Based on MLS House Price Trends, Toronto Real Estate Board, and Statistics Canada microdata files (PUMF) for 1981, 1986, 1991, 1996.
- 2) The region is the entire TREB service area, which is roughly similar to the GTA.

TABLE 19: TRENDS IN THE COST OF LIVING: CONSUMER PRICE INDEXES FOR ALL CONSUMER ITEMS AND FOR OWNERSHIP AND RENTAL HOUSING, TORONTO CMA 1981-99.

Consumer Price Index: Toronto					
	1981	1986	1991	1996	1999
<hr/>					
All items	57.3	77.1	100.0 (1992)	106.0	111.2
Ownership Housing	53.0	71.3	100.9	97.9	98.9
Rental Housing	57.9	77.9	97.5	108.2	113.5

Source: Statistics Canada, CANSIM

TABLE 9 : TRENDS IN MEDIAN HOUSEHOLD INCOME, Nominal and Real (Deflated), Toronto and Oshawa CMAs*, 1981-96

	1981	1986	1991	1996**
Nominal \$	25,148	36,898	50,057	48,625
Adjusted (Deflated) *** (1992 \$)	43,887	47,947	50,613	46,006

* Weighted by the respective populations of the Toronto and Oshawa CMAs.

** The 1996 figures are lower than expected, perhaps due to a change in the method of calculating income.

*** Adjusted (deflated) by the Toronto Consumer Price Index (CPI) for all consumer items, with 1992 \$ = 100.

Source: Statistics Canada

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